

GAMES MASTER FOR THE SAM COUPE

At last YOU can create stunning games and demos for the Coupe, with fast, smooth, animated sprites, complex sound effects, missiles, platforms, lifts, detailed backgrounds etc. No programming expertise required! Most of a game's design is specified by the menu-driven editor, which lets you edit graphics, animation, movement, sprite collision actions, sound effects, masking, control keys etc. A simple but very fast compiled language controls some features. A complex demo with animated bouncing sprites passing over and under each other, in front of a background, can be written with just a few commands to start the sprites off. (Once started, the sprites can act by themselves.) The editor produces stand-alone ROM-independent CODE programs that are free from any copyright restrictions - so you can sell your masterpiece! Impressive demonstration programs and an extensive sprite library are included to get you started. Backgrounds and sprites can also be grabbed from any Mode 4 screen and edited.

SIX SPRITE PLANES PLUS BACKGROUND
BIG SPRITES - UP TO A THIRD OF THE SCREEN AREA
TRUE COLLISION DETECTION ON SPRITE EDGE
SMOOTH, FAST PIXEL MOVEMENT OVER 100 ON-SCREEN SPRITES
POWERFUL EASY TO USE EDITOR COMPILED CONTROL LANGUAGE
COMPLEX MOVEMENT PATTERNS AND ANIMATION SEQUENCES
STEREO SPRITE-FOLLOWING SOUND EFFECTS

Written by Dr Andy Wright, author of the Sam ROM, MASTERDOS and MASTERBASIC, the program works with 256K or 512K RAM and ROM 2.0 and above. A comprehensive manual is included.

GAMES MASTER COSTS JUST £24.99 INCLUSIVE OF POSTAGE AND PACKING (ADD £1 IF OUTSIDE EUROPE)
SPECIAL PRICE TO INDUG MEMBERS: £22.50 (QUOTE MEMBERSHIP NUMBER)

FILE MANAGER is a flexible file program for the Sam Coupe. Up to 26 fields per record - up to 248 characters per field. Field length may vary from record to record. Files up to 780K long. Add new fields to existing files. Select records, sort, display, print, delete or save selected records. Delete contents of one field or fill a field with same information in all selected records. Merge files with the same file structure. Sort by any field, and fine sort by any number of other fields. Unlimited user-defined screen and print layouts. Headers, page numbers and multiple copy printouts available. Written in MASTERBASIC - no machine code - tailor program to your individual requirements. Requires MASTERDOS/MASTERBASIC v. 1.7 or later (Return your original disk for free upgrade if required - enclose SAE if not buying anything)/ROM 3/1MB extension or twin disk drives. (512K unexpanded Sam Coupe with one drive can use program, but with reduced file capacity - 280K maximum).

FILE MANAGER costs just £12.99 including postage and packing.

Also available: MASTERDOS £15.99 and MASTERBASIC £15.99
BUY ANY 3 PROGRAMS, GET £10 OFF!

Make cheques and postal orders payable to:
BETASOFT, 24 WYCHE AVENUE, KINGS HEATH, BIRMINGHAM, B14 6LQ

Vol.6 - No 1.

September 1992.

FORMAT

FOR SPECTRUM AND SAM USERS

(Incorporating Sinclair & Sam Computing)



SPECIAL ANNIVERSARY ISSUE
Looking Back - Looking Forward.

£1.25 [UK R.R.P.]

ISSN 0963-8598.

CONTENTS

Vol.6 No 1.

September 1992.

SPECTRUM PRODUCTS

- +2A MOD KIT** - Converts a +2A into a standard +2. This allows the PLUS D; DISCiPLE and INTERFACE 1 to operate properly. Gives you two expansion ports. Includes ROM, two port FIXER2 and full fitting instructions/manual updates. £18.50
- THE FIXIT** - Converts the +3 and +2A expansion port so that some 48K add-ons will work. £9.50
- VTX5000** - V23 direct connect modem with viewdata software in ROM. * SPECIAL OFFER * 48K or grey +2 version - £11. +2A/+3 (includes FIXIT) - £20.50 - BOTH OFFERS INCLUDE PD TAPE.
- PD TAPE 01** - Spectrum comms software for VTX5000 and RS232s. £1
- USER-USER** - Two VTX5000s (48K) with a tape containing software to allow direct transfer of software between users via the phone. (Tape easily cloned for other user). £30
- µ SLOT** - Two port adaptor for any Spectrum. One facing up the other back. £3
- MEMBRANES** - Keyboard membranes at keen prices. Full instructions. 48K Rubber type machine - £4.50, 48K+/128K - £7.50
- +3 CP/M+ and MALLARD BASIC** - Written by Locomotive Software. Includes 3" disc with software, utilities and a very detailed manual. £29
- +3 PD DISC** - CP/M and +3 software, includes 706K B: drive formatter, and 203K A: drive formatter. £2

SAM PRODUCTS

- PRO-DOS** - Allows you to run CP/M 2.2 programs on SAM. Comes on two discs with a comprehensive 68 page manual. SPECIAL OFFER £27
- PRO-DOS PD1** - A collection of PD programs including a wordprocessor, Spreadsheet, etc. Over 700K of software. (includes tutorial) Just £1 if ordered with PRO-DOS, otherwise £2.
- The P.A.W.** - The Professional Adventure Writing system from Gilsoft. For use under PRO-DOS. Includes two manuals and all files for writing text adventures. SPECIAL OFFER £17.50
- SAMPLIFIER** - Stereo Amp powered from SAM. Drives speakers or phones. Plugs into light-pen socket. Amplifier alone £20, with speakers £25, with headphones £23

Please allow 28 days for delivery. All prices include UK P&P.
Overseas orders: add £2 on modems; PRO-DOS or +3 CP/M, £1 on other items.

B.G.SERVICES.

64, Roebuck Road, Chessington, Surrey, KT9 1JX. Tel: 081 397 0763

News On 4.....	4
The Editor Speaks.....	5
Short Spot.....	7

ANNIVERSARY SPECIAL

The Wase Story.....	8
A Programmer Or An Artist...	13
The Young Years.....	15
A Basic (ROM) Story.....	17
From TI99 to Stardom.....	19
Road To Personal Banking....	21
An Editor's Life.....	25
Thought Spot.....	29
Coming Soon.....	31
SamPoke.....	33
Your Letters.....	35
Small Ads.....	38
FORMAT Readers Service.....	39

THIS MONTHS ADVERTISERS:-

BETASOFT	Back Cover
B.G.SERVICES	2
FRED PUBLISHING	24
GLENCO SOFTWARE	14
HOBBY SHOWS	32
PBT ELECTRONICS	28
S.D.SOFTWARE	6
STEVE'S SOFTWARE	20

FORMAT ISSN 0963-8598.
(C)Copyright 1992 FORMAT PUBLICATIONS. All Rights Reserved.

No part of this publication may be reproduced, in any form, without the written consent of the publisher. FORMAT readers may copy program material only for their own personal use. While every effort is made to ensure accuracy in FORMAT the publisher will not be held liable for any errors or omissions.

FORMAT is published by FORMAT PUBLICATIONS.
34, Bourton Road, Gloucester, GL4 0LE, England.
Telephone 0452-412572. Fax 0452-380890.

Printed by D.S.LITHO. Gloucester. Telephone 0452-523198.

NEWS ON 4

REVELATION RESURRECTION

The good news for existing SAM owners this month is that the software division of SAMCO has been saved and will be making a comeback in the next few weeks.

Revelation Software, as the new company is to be called, will relaunch most of the old software titles and many new items as well.

We understand that a deal has been struck with Stones Jones, SAMCO's liquidators, which will allow many of you who ordered software before SAMCO collapsed to get your software from the new company.

The management of Revelation has said that all customers should hear from them soon, so please be patient.

Meanwhile talks between West Coast Computers and MGT's receiver, about the future of the SAM itself, are still proceeding. Let's hope good news will be available soon on that front as well.

HOBBY SHOWS GO NATION-WIDE

Following the success of the HOBBY & ENTHUSIAST '92 show, at Bulth Wells over the weekend of the 22nd & 23rd August, similar shows will soon be appearing at venues around the country.

Already Reading, Brighton, Harlow, Maidstone, Doncaster, Malvern, Swindon, Altringham, Basildon, York, Torquay and Stoke on Trent all have shows planned before Christmas - with more venues to come in the new year.

Each show is designed for all the family, with events covering Model and Craft, Knitting and Stitching, Classic and Racing cars, and of course Computers.

For more details ring 0225 868100.

AMSTRAD'S NEW Z80 MACHINE

Amstrad have launched a new Z80 based portable computer called the NC100. Looking very much like

Sinclair's successful Z88 machine the NC100 uses an LCD display and weighs in at 2.2lb - the same as a bag of sugar (the sweet stuff not Amstrad's managing director).

Priced at £199 the computer uses colour coded keys and Amstrad makes the promise "If you can't use the computer in just five minutes you'll get your money back" - I wonder what they will do with all the second hand machines?

COMMODORE CUTS A600

Amid growing rumours that Amiga sales have nose-dived this year Commodore have slashed £100 of the price of the A600 variant bringing it down to £300. However the hard-disc version will still retail at £500.

Several leading high-street chains had already decided to cut prices in order to shift stocks and this led to pressure on Commodore from the smaller independent retailers.

One retailer told FORMAT "If they had not cut prices to small shops as well they would have lost over 50% of their sales".

Reports are also coming in from the US that Commodore are looking to boost their share of the PC market and will be cutting investment in their Home Computer division in the future.

USER GROUP FUSS

Spare a thought then for members of three PC user groups that have recently merged now find themselves with a yearly bill of £195. Members of WUG (Windows User Group), WDA (Windows Development Association) and the Windows Forum now all belong to the WUF (Windows User Forum).

Even the rival PC Independent User Group charge £35. Just think, if they were wise enough to own a Spectrum or SAM and join us it would cost them as little as £12 per year - and they would get FORMAT each month.

Not quite the usual FORMAT this month. In order to celebrate our 5th Birthday, the start of volume 6 and the Spectrums 10th birthday I thought a little nostalgia would be in order. And just imagine, as we now have copies of FORMAT each month in the British library system, some poor school kid in 2192 may be writing a project on 'The Home Computer 1982-1992' and find this issue a valuable source of information - only time will tell.

I put out the challenge to our writers (and a few other people I knew) to tell their story. Too often I hear readers say something like "It's alright for the likes of them, they know it all, what chance have I got, I'll never understand it all."

Well everyone had to start somewhere. Back in the old days (when men were men and programmers warmed their hands over power supplies that really needed water cooling systems) people had to start from scratch. Someone had to take the first computers and do things with them, then write it up so others could read about it. As editor of FORMAT I am lucky, I have been able to tap into a very wealthy seam of knowledge that has been built up - in most cases the hard way - over the last ten or more years.

So this month I'm allowing a few people to tell their own story - how they got started. I've not 'edited' their comments, just let them have their say. I hope you enjoy these trips down memory lane - I have.

But remember, even though you may not have been involved with computers for as long as several of our regular writers, you also have something to offer - in many cases your lack of knowledge could be your biggest asset. Why? Because you will find new ways of doing things, new tricks, new ideas, new uses for our beloved machines - in you rests the future of the Spectrum and SAM. Don't be afraid to write down something you have discovered. Yes "us experts" may already know about it -



but we can take things for granted - other readers may not know it. If you don't tell other people they will be the poorer for the lack of your knowledge.

Ok, that was all I wanted to say, I know I go on a bit sometimes, but I do believe we have some of the most loyal and devoted readers a magazine could wish for.

Now a complete change of subject. The rescue of SAM is going well, although various people going off on holiday has slowed down negotiations somewhat. The response from FORMAT's readers has been fantastic, several offering loans of much needed money to help the project. There has also been many phone calls asking if small amounts will do. Well, yes, every little helps as they say. A special account has been opened under my control for donations. This money will then be handed over to West Coast Computer when a deal with the receiver is signed. In the unlikely event that things fall through I would then use the money to buy spares (especially the ASIC) from the receiver to ensure machines can be repaired in the future. Already I've received several cheques, ranging from £5 to £60. If anyone is interested then send cheques - payable to WEST COAST FUND 2 - to me at the usual address. I'm sure West Coast will find a way to reward you all for your kindness once the rescue is complete.

One last thing. Because of a change in banking law we are unable to accept cheques in future that are endorsed 'ACCOUNT PAYEE ONLY' or 'PAYEE ONLY'. Any cheque bearing these words is not liable to be rejected - with the subsequent costs that would be involved. Please make sure you just cross cheques - that is all that is required.

Bob Branchley, Editor.

S.D. Software

SPECMAKER UNIDOS PC-SUITE

SPECMAKER The simplest Spectrum emulator for your SAM. 1000s of 48K programs work without the need for any conversion. Most other programs need only minor changes. All the extra SAM keys work in Spectrum mode. Uses SAM's parallel printer port and up to 360K of SAM memory as a RAMDISK. PLUS D and all OPUS disks* can be loaded into SPECMAKER and saved to SAM disk. Can now convert files between Messenger & SPECMAKER format and so save on valuable disk space. Supplied on 3.5" disk *Master Dos & Master basic required for single density OPUS

PC-Suite. From the author of SPECMAKER S.D. Software brings you PC-Suite. Now you can transfer your IBM data files by reading and writing IBM disks on your Sam. PC-Suite will let you format IBM disks on Sam. Write Sam basic programs on your PC.AT. Use PC-Suite to copy Sam data files to PC disk and print them on a high quality laser printer. Many more uses.

nb. Not a PC emulator.

UNIDOS Version 2 of the incredible new DOS from Steve Warr for the PLUS D and DISCIPLE. Same DOS file for both systems. Random files. Sub directories. Hundreds of files on one disk. Hidden files. Protected files. Copy files of any length. Incredibly versatile screen dump routines. Error trapping. Many more features. Compatible with all Spectrums*. Over 20 programs now included on the disk. * +2A/+3 restricted to 48K mode.

SPECFILE+ Now a Spectrum data filing program that never gets out of date. Specfile+ holds a massive 28K of data and by using data compression makes it seem like much more. Very fast CASE selective and complex searches. Designed to be added to so it grows as you do. This program is a must have for any one with data to hold.

INDUG PRICES		NON MEMBERS	
Specfile+	£ 9.95	£12.95	
UNIDOS	£19.95	£25.95	
Createfile Manual	£ 5.50	£ 6.50	
Specmaker	£ 9.95	£12.95	
Specmaker Upgrade	£ 6.50	£ 8.00	
PC Suite	£19.95	£25.95	
IBU* /SAMIBU	£ 3.50	£ 4.90	
DBU*	£ 4.00	£ 5.50	
File Convertor*	£ 4.50	£ 5.30	
Hackers Workbench*	£ 8.50	£ 9.90	

* GDOS programs still available *

PLEASE Add £0.50 Postage
(£1.20 OUTSIDE UK)

DO NOT FORGET YOUR INDUG
MEMBERSHIP NUMBER

S.D. Software, 70 Rainhall Road, Barnoldswick, Lancashire, England, BB8 6AB.

SHORT SPOT

Edited By:- John Wase.

As this is in the nature of a ten year's issue, I thought I would look up some of the readers' letters in early magazines, to see what sorts of problems they had, and if they were vastly different from those of today. Actually, the advice given is what many folks just starting to program need. For instance, one letter from a software house tells us:-

"There is a problem with the Spectrum if you attempt to load a long program after running a large machine code program - you often either get a message on the screen "H out of memory, 0:1" after the program title appears, or if the program loads, when it is being run. Machine code programs often leave the system variable RAMTOP set to a relatively low value. Even after pressing NEW and ENTER, the machine still believes it is a 10 or 12k Spectrum".

He suggests either turning the machine off, or using CLEAR 32599 or 65367 for 16 or 48k Spectrums. Wow! Personally, I'd have thought such a comment was liable to wear out the power input plug... And what's wrong with RANDOMIZE USR 0 anyway. But this is the level we're looking at. Amazing, isn't it...

Evidently lots of readers were still investigating the ROM and what it might do - POKEing around at random, in fact. Typical of these letters is one from a reader in Selby, who discovered a POKE to fill the screen of his 16k Spectrum with vertical lines, "without", as he says, "crashing". The lines are in the present ink colour. All you need to do is POKE 23659,1. This POKE works because it is to do with how many lines there are in the lower part of the screen. The number is usually 2: Try it and see for yourself.

Another useless POKE is zero into address 23614: fine to teach the know-all who know all about programming. Do it first, then ask them to rectify the problem in your three line program that you've cunningly typed - and, to their discomfort (and your assumed wrath), the Speccy will "NEW" as soon as a syntax marker appears.

Finally, there is a request from a reader who was trying to write a program simulating the card game of Bridge. It is easy enough to instruct the computer that if four players play the 2, 3, 4 and 5 of spades in a given trick, the five will win, because it is the highest number. However, the Ace, ten, Jack, Queen and King all present problems. What is needed is a machine code routine to re-arrange the alphabet in such a way that A is greater than K which is greater than Q which is greater than J which is greater than 10 which is greater than 9.... Oh, and this is for a ZX81, so space is at a premium...

Now, I've got several solutions for the ZX81. But we're ten years further on, now. So come on, all you lot out there. I want a variety of solutions, some for the Spectrum, some for SAM. And they needn't be in machine code as we've got far more room to play with now. But they do need to be written with your customary ingenuity. I look forward to seeing your efforts.

So, although some problems mentioned are, by today's standards, trite, others are just as interesting, aren't they. Surprised? I'm not: the ol' ZX81 was fun, too. So come on, send your solutions to Short Spot, where normal service will be resumed next month. Send them to John Wase, Green Leys Cottage, Bishampton, Pershore, Worcs, WR10 2LX. Happy Computing.

The Wase Story

By:- John Wase.

If you don't like reading recollections, skip this bit. For this is my own personalised history of the early Spectrum days, and how the Spectrum and I came to know one another so well. Actually, it almost never happened. This was due to an incident at the University in the late 1960's - early 1970's. Around this time, the University of Birmingham had a new Computer. Full of huge boxes, seven feet high, and with enormous reels of tape, jogging round and round. All in its own air conditioned basement, under the Great Hall. To operate this monolithic monstrosity, I went to classes and learned a bit of Fortran (actually "Egtran", the dialect of Fortran IV used by this beast). I was bursting with knowledge and the desire to show it off.

At the time, a research student was looking at the physical characteristics of the air-lift fermenter. He was seeing how good it was at transferring oxygen out of the air-bubbles and into the liquid in which hapless wee beasts were eventually to grow. He had a whole row of home-made dissolved oxygen probes, and after making a lot of measurements on things like air flow rate and temperature, took the readings of the eight probes, made a minor alteration to the system and started all over again. In the evening, he sat down and worked out things from all this data.

Big-hearted John offered to write a program in Egtran to ease the problem. It went something like this...

Get hold of the green form. Carefully list the numbered statements on it. Take it to the Dungeon under the Great Hall. There, next to the air-conditioned room, was a little kiosk. In it was God. God was female, had blonde hair (black at the roots)

and sat there, idly picking at her nails. If she liked the look of your face, she took the form. Just to show impartiality, she then tried to slam the glass doors on your fingers. You had to be quick in those days.

Three days later, you went and prayed to the pigeon-holes. In the fullness of time, an enormous wad of paper emerged, full width, tractor line printer, complete with those green lines, wrapped around a large deck of punched cards. Open it with trembling hands. By line 2, it had failed to compile, let alone run the compiled code. The rest was full of error messages. Error, error, error! screamed the brute. For enough time to paper the wall.

You retired with your bundle of rubbish and made correction statements. Then approached God again.

The whole thing took 6 months to get up and running. I was so fed up that I vowed never to have anything to do with computers again. Egtran indeed! A slide rule was quicker.

So it was that the white-hot computer revolution, the ZX80 and ZX81 passed me quietly by. Then a research student who had just finished turned up one day to bid me goodbye, before going to furrin' parts. "Here's something for you, John", he said. "If you don't like it, I'm sure the kids will love it. But I don't think, knowing you, that they're going to get a look in". He handed me a big box. In it was one of the first 16k Spectrums.

This was it. Complete with "cockroach" over the chip. (A mod for series 1 pcb's). I took it home; upstairs to the bedroom; set it up to a battered old cassette recorder. And this is where the second phase of my

personal computing nearly came to an abrupt halt.

Trouble is, my wife is too conscientious a teacher. She works too hard. She overdoes everything. I guess it's in her (fiery) Welsh temperament. Having done our 60 miles commuting, a day's work and got the tea and put some washing in the machine, she fell to ironing, then to marking class work and correcting homework books. At around 10.30, she fell into bed, exhausted. Wase was busy with the Spectrum, on the little dressing table, typing in a little program from a freshly purchased copy of "ZX Computing" (R.I.P.). It was the famous keywords that got me. You remember, all you SAM owners - a 16/48k Spectrum comes up with a "K" cursor, and one keypress inserts a complete tokenised keyword. Well, I was a stranger to the system, and committed a totally ingenious error, as Wase will. "TO" typed out in capitals is treated as a variable. All right - we all know now that the cursor will do two skips over it, not one. But I was green at the time. And whilst the editor happily accepted the line, my program refused to run. And, at 11 o'clock at night, I reckoned it was time to save it. By that time, my good wife had turned off the main light and was snoring lustily. Quietly I connected the recorder in the half-light and inserted a nice new blank cassette. I guess I got the leads in wrong - you remember - the famous "ear" and "mic" leads. The recorder gave an ear-splitting screech and Wales rose, horizontally, a distance of some two feet from the bed. I guess I never saved that program...

My memories of this period are a little dim. Shortly after, I acquired a 48k Spectrum, and turned it into a word processor, with the evergreen Tasword 2 and one of the first Epson FX80 printers. Not the old MX, but the superior FX. This had a large buffer which could be switched in and out with the DIP switch after you'd spent half an hour, disembowelling the brute to get to it. The big attraction was that you could devise and download

fancy characters (like greek alphas) which I needed. It cost £400.00, cut price. Gawd knows what that would be today. Soon after, I added a keyboard with real keys. The Dk'tronics was short of enough keys to touch type, so I added some, and the augmented keyboard and the downloaded Greek formed the basis for some of my first published articles.

I really can't remember which series pcb's these first two spectrums had. The first was probably a series one, on account of the cockroach. The second was probably a series two. Thus it still had a row of potentiometers inside - you remember - TC1 for shimmer control and TC2 for colour. And VR1 and VR2 for blue/yellow and red/green. You could have endless hours of fun twiddling them with a sharpened matchstick. As you probably know, the April 1982 pcb's cockroach was a little extra integrated circuit to stop the CPU and TV interface fighting over the data bus. By issue 2 this had been incorporated into the ULA. Issue 2 also had room for additional RAM chips and thus didn't need a little add-on board to upgrade to 48k like issue 1. However you fiddled, some TV's refused to give proper colours, and issue 3 was designed by computer to accommodate this and to allow for the use of a variety of memory chips, since there was a shortage at the time. However, since the ULA had had to be redesigned, there were also other problems... Shades of Sinclair.

Let's leave computer design, and the tortuous tricks that small variations play on one's software. Let's look instead at data storage; the sort that so rudely woke my wife. The Spectrum cassette interface is fine. It really is. You try loading cassettes into other, lesser computers, and you'll know what I mean. In comparison, the Spectrum loads chewed-up cassettes that make others sick. But, like all cassette interfaces, it's not fast. It takes around four minutes for a 48k game - that's 12k a minute. Try that on your "Windows 3.1" Super VGA screens, my buck, and see how you get

on. Makes you realise how memory-profligate some current programs are... Sinclair's search for mass storage devices had obviously used the following argument...

Eight inch discs (common at the time) holding 100k are huge and fragile. Five and a quarter inch discs holding 100k are big and fragile. Let's make something small, light and sufficiently robust to put in your pocket with a bunch of keys. A good idea. Unfortunately, as was so often the case with Sinclair, his good ideas took ages to be translated into reality. And others could think along these lines - and did. Three and a half inch discs, just about to emerge, fulfilled most of these criteria.

I remember the first microdrives I saw. I guess the guy who had ordered them had put his name on the list the day they were announced. He was, at the time, demonstrating a new program for the Spectrum, in our Medical School. His name? Andy Wright. The program? Beta Basic. Many years later, I borrowed the same Microdrives from Andy. They worked superbly. I guess Clive took more trouble over the first few issues, for many reports of unreliability subsequently arose. Wase waited for a more reliable disc system, eventually opting for the "Discovery", as told in a separate story.

Meanwhile, Uncle Clive continued to confuse the issue by changing his pcb designs. Issue 3, the one with the new ULA, mentioned above, had a new, louder Beep, too. This was small recompense, however, for the change the values returned from the keyboard input ports. Many games programs written for the issues 1 and 2 which used the IN command were confused, since from issue 3 onwards, bit 6 fluctuated instead of being constant. A lot of software houses kicked up about it, but Clive's men remained unmoved: there are ways round it, anyway!

Further minor alterations were made in later issues, but they were only

very minor - this was essentially the final 48k job. As these revisions were issued, so my home-made keyboards began to show their ages: dry joints, for instance, preventing keypresses right in the middle of articles, and demanding a drastic intervention with the soldering iron. Meanwhile, my fame had clearly reached the ears of Uncle Clive. He realised that his baby was being overtaken by others with better keyboards, (and even by Wase), and put it a new box. The Spectrum+ arrived, complete with its awful keys. I found them like the QL, but worse. I always started to type, resolved to like the new incarnation. And invariably promptly caught the edge of the next key with my nail. Then the space-bar would jam... In due course, my efforts to unjam it would crash the machine. And eventually, in a fit of fury, I'd shake it. And half the keys would fall off...

Meanwhile, Sinclair was clearly looking for ways of raising the readies, having suffered from dongles and washing machine motors. I mean, the QL's operating system was superb, but the keyboard tacky and the microdrives unreliable, so sales were not as good as expected. There was only one local buyer for the C5. John Jenkinson, proprietor of the Evesham Hotel, has never been known for being shy of seeking publicity. Like the day his photo appeared in the local press in the nude, in a bath full of foam to make it half-decent, wearing a mob cap and surrounded by about 30 yellow plastic bath-ducks. The take-home message was that they took so much trouble to look after you that you even had your own plastic duck for your bath. To him the C5 was, for a short time, manna from Heaven. He had a slogan for the Evesham Hotel written in that distinctive upright script they used for all their publicity, on the body of the brute (well, it was only a short slogan) and drove it round and round town. When it clapped out (which didn't take long), its corpse was left next to the main hotel entrance, and used for growing tomatoes, the slogan still proudly visible. Did you know that a C5

accommodates three "Moneymaker" plants quite nicely?

All this cash Uncle Clive failed to rake in, along with the general decline in the sale of home computers led Sinclair to new marketing ploys. You could buy a new upgrade kit (the Spectrum+ case/keys) for £20.00 from Sinclair Research, or send off your computer for a £30.00 upgrade job. None of this really made any difference, however. Uncle Clive was broke. Robert Maxwell offered a bail-out, then thought better of it. Something had to be done.

The money for the infamous 128 came from a Spanish Company, Investronica. Eventually, the 128 filtered over here, minus the notorious keypad, which everyone had heard of, but no-one had seen (though the operating system was still on the pcb). This 128k Investronical job largely passed me by, for it emerged with little software, similarly awful keys to the Spectrum+, and a heat sink at the right-hand end which burned your hand. Opus brought out ROM 2.1 for their Discovery. Amstrad bought out Sinclair.

The PCW show in September 1986 was the platform used by Amstrad to show off his +2. It was described in glowing terms in October's "ZX Computing". Many were, however, less complimentary, particularly when its idiosyncrasies came to light, and said rude things about Alan Sugar. Actually, I felt that this was one of the few things that he'd not done too badly: in short, I rather like my +2s. They have reasonable compatibility with Sinclair's machines. They have enough interesting quirks to give them character. And I can actually type on the keyboard.

I've just mentioned the "Discovery", the subject of a separate article, so I'll merely say that at this stage, it was dying fast. So was the Saga keyboard. In its final death throes, the Discovery was being marketed by bundling a Saga keyboard and a special version of "The Last Word". I

understand that years later, a large pile of these was discovered in a warehouse... But talking of the Saga reminds me of the earlier Saga effort. You remember - a funny white keyboard on which dead-fleshed keys were optimistically labelled, but needed the press of an adjacent key to get them to work. Happy days! You probably also remember buying it, and finding that there were one or two programs that just wouldn't work when it was attached to your Spectrum. I think Sinclair's "Logo" was one, though I wouldn't swear to it. Well, the Amstrad-sinclair +2s suffered from rather similar defects. For a fair proportion of them, "Tasword +2" refused to work properly. In addition, many of them would only admit to some of the keys in 48k mode being pressed after they'd warmed up. Warm-up time, depending on the machine, varied from a minute to half a day or more. The board could be bodged with a capacitor to fix this, but the bodge didn't help "Tasword +2". Curiously, "Tasword +2" worked perfectly on an Investronica 128.

If you open a 128, you'll find that the keyboard membrane ribbon cable connectors are different from the Amstrad's. And the connections to it are in a different order. My own feeling is that the 128 worked through serendipity, merely because Sinclair stuck to his old design. If you enlarged the membrane, you changed its capacitance. This had happened both for the Saga membrane and the Amstrad +2. Programs with their own keyscanning routines then failed to pick up keypresses. Tasword+2 had such a routine so that it could use a big keyboard-buffer for insert mode, and also to permit print spooling. Logo had a similar arrangement. Trouble is, it needs an awful lot of fiddling around with the keyboard connectors to put a 128k pcb into a +2 case to test this. Has anyone tried?

I've probably mentioned elsewhere the MSX computer standard that never took off, and the way in which Alan Sugar bought up loads of three inch drives. Some of these found their way to the

new Sinclair +3, which arrived about a year after the +2. I remember staggering through London rush-hour with a review machine from "Your Computer". Weren't those power-packs heavy. Typically Amstrad, typically not compatible with anything in particular - not quite 48k compatible, not quite +2 compatible, not quite CPM compatible - we all remember the problems. For instance, the old keyboard quirks of the +2 were solved, but occasionally one got single keypresses for unshifted keys. Try "Tasword+3" in overtype mode - it's frustrating to cursor right and find your text overwritten with a row of 7's. In fairness, the +3's given little trouble. The drive actually works, though it's rather lethargic... And as a machine, it's infinitely preferable to the dreaded +2A...

But I'm going ahead too fast. Back to the peripherals. As the Discovery died, the Disciple came to life. I well remember plodding up the stairs to a garret in Hendon where Alan and Bruce were listing code, answering the phone, wrapping parcels and trying to give me and a thousand others simultaneous interviews. By this time, too, I was introduced to Bob, and the idea of FORMAT gradually took shape.

The first Disciples worked, but the disable button was likely to disintegrate at any moment, and the tacky box creaked abominably under the weight of a +2. Meanwhile, aggro in the garret with Rockfort Products ensued. The next time I interviewed Alan and Bruce, it was in an offshoot of Uncle Clive's place the size of a garage carved out of a bit of Chesterton Mill in Cambridge. It was also about this time that Simon Goodwin published his piece about the "Superspectrum" in "Crash" - totally factually accurate, but perhaps suffering from Alan's optimism over timings. The hype was high, but SAM failed to appear: a long gestation period was still necessary. However, that draughtily garage did produce the doughty PLUS D, so many of which are still faithfully in use today. I remember that at times, Alan had the

whole family assembling them.

I could tell you about the way in which I managed to trace Carol Brooksbank, of "ZX Computing" fame, through the Church, and a very suspicious clergyman, so that we could get her to write for us. And the move of Alan and Bruce to Swansea. And the eventual launch of SAM. But that's another story.



"Look mum, could you hurry up and finish - I don't want to miss the late night horror play"

ANNIVERSARY SPECIAL

A PROGRAMMER OR AN ARTIST?

By:- Jon Nixon.

Hi, my name's Jon Nixon, and I'm to blame for those peculiar FORMAT cover pictures. I'll admit that sometimes the jokes are a bit obscure, but you try coming up with a good joke about printer interfaces.

I've only missed one cover in four years, though sometimes its been close. I ended up posting one from the Outer Hebrides because I'd forgotten to do it before going on Holiday.

I'm actually a programmer first and an artist second ("An artist?" I hear some of you cry in disbelief). When I left school in 1980 with A levels in Maths and Art I had to decide whether to become a starving painter with an expensive addiction to hardware, or to live it up as a programmer who doodled in his spare time. Tough choice. By the end of 1980 I was programming for Eagle Star in Cheltenham.

Over the last ten years I've owned a Spectrum, a BBC, another Spectrum, a QL, another BBC, an Apple II, an Amstrad CPC, another Spectrum and an Amiga, and I can honestly say that the Spectrum has been the most fun to use.

My first venture into Spectrum programming became a 48k epic in BASIC based on the old Star Trek games that were printed in several magazines. A friend had been marketing a ZX81 game through R&R Software of Gloucester, so I got in touch with them, which is how I met Bob.

A machine-code maze game called "Gnasher" followed quickly (reaching number eight in the Spectrum charts), and Bob was licking his lips in anticipation of great things to come. Unfortunately that was ten years ago and I haven't written anything since. He doesn't understand that truly great programmers have to be... inspired...

to create their masterpieces. [Oh, I see, I thought programmers were just after the money. Bob]

In those early days (said Jon, pulling his long white beard) we used to sell our programs at ZX Microfairs, which were great fun. The software industry wasn't nearly as slick in those days. Everything was small and friendly and everybody knew each other. My claim to fame is having a drink with Clive Sinclair. (Well OK, he was in the same Pub as me). [No, Jon it was a wine bar, and we were drinking cocktails to celebrate the 1st birthday of Sinclair User I think (are they still going?). Bob]

I remember having a meal in a hotel after a show in Sheffield, when Bob started joking about the "kids" from Imagine Software, who had just spent £4,000 on a mahogany conference table so that they had somewhere to eat their fish and chips. At this point someone at the next table turned round and said, "Actually it was £5,000 and what we do with it is our own business."

Since those early days I'm afraid most of my programming has been at work, and the pictures have taken over as the hobby. I've done a few paintings for cassette-inserts, and of course forty-seven front covers for FORMAT! Talking of which, there goes the phone...

"Hi Jon, its Bob. Can you do me a funny picture about multiplying three-dimensional matrices by next Tuesday?" "No problem Bob, the ideas are queuing up already."

[Jon Nixon could have been one of this countries top games programmers - but then he met me. Oh well, At least we had some fun in the old days. Bob]

S.C.A.D.

Glenco Software is proud to announce the arrival of the

Sam Coupé Arcade Development System

IT HAS ARRIVED!!!...THE MOST POWERFUL AND ADVANCED GAMES DESIGNING PACKAGE EVER WRITTEN FOR THE SAM COUPÉ.

THE SCAD SYSTEM, WHICH HAS TAKEN OVER 30 MONTHS TO COMPLETE, WILL ALLOW THE BASIC PROGRAMMER TO WRITE PROFESSIONAL LOOKING ARCADE GAMES WITH ABSOLUTE EASE.

Just some of the extensive features

64 On screen sprites	Large number of sprites supplied
Large 200 page A5 manual in ring binder	Up to 255 scenery graphics
Over 60 extended BASIC commands	Sprite paths
Complete game, supplied with remarks	Out-of-this-world sound effects
Comprehensive room designer	Over 250 rooms
Automatic collision detection	Proportional character sets
Up to 255 sprite images	WIMP environment design program
Ladders, stairs and conveyor belts	Joy-stick / keyboard control
Sprites can move behind scenery	8 sprite planes
Automatic direction animation	Automatic missile firing sprites

Are you fed up with the lack of games for your Coupé ? Well write your own !!

WRITE A MASTERGAME TO CHALLENGE ALL OF YOUR FRIENDS

PARENTS: Writing educational software with SCADs animation may seriously improve the presentation of your programs, making them even more fun to use.

Send us a blank disc, and a stamped addressed envelope for the latest SCADs demo.

ALL OF THIS, FOR ONLY £24.95 INCLUSIVE

GLENCO SOFTWARE

15 ALFORD LANE, WHITEHOUSE FARM
STOCKTON-ON-TEES, CLEVELAND, TS19 0QP
TELEPHONE (0642) 606358

Glenco Software are so confident that you will find SCADs unbeatable, we are offering a

28 DAY MONEY BACK GUARANTEE

If for ANY reason you are not satisfied with SCADs, send it back and we will refund your money. Unleash the power of S.C.A.D.s. onto your Sam Coupé and you will never look back.

ANNIVERSARY SPECIAL

The Young Years

By:- Nev Young.

I have been asked to write about some boring things in the past but I can think of none as mind numbing as what is about to cover these pages. Your 'ed'itter has bullied me into telling all about me. If I were you then I'd turn over now.

I was born a very long time ago when I was very young in the presence of my mother. It was cold and dark and the snow was blowing a blizzard that November night. I just shut my eyes and curled up and went back to sleep. I soon went home to join my brother, two sisters and my dad. Because we was so poor I had to wear hand me downs until I started school. I still like to wear dresses and girls underwear. My brother had a great effect on my early life as he left home when I was ten months old leaving me to the tender mercies of my two sisters. I was under the impression that my dad was the gardener until I was about five, as he lived in the greenhouse.

When I was old enough I was sent to school and went there almost every day until I was much older. I left school as a failure with practically no qualifications at all. (8 O & 2 A levels, english at the 5th attempt). I drifted into the first job that my schooling could get me, as a TV repair man (well still a boy actually). All I needed to do was fix 3 TVs in less time than the other applicants and be able to drive. I stuck at that for six months and then told the boss he could stick his rotten job. As a result of me going to the tax office to get my stamps sorted out the boss was arrested for fraud a few weeks later.

After a few weeks on the dole I started as an adding machine mechanic for Burroughs Machines Ltd. I was soon progressed onto electronic computer thingies and stuck at that for four

years. Then I had a run in with a new boss (I told him he was a f***ing thick b**tard, which he was) and two months later got a transfer to a Scottish branch. During this time I bought my first Spectrum. I really wanted an electronic game known as 'Simon' but they had none. The price of the Spectrum came down £50 the next day. I spent the Saturday afternoon learning basic and by Sunday lunch had written a 'Simon' program.

I stayed in Scotland for 12 years progressing from a grease monkey to a software engineer in the main manufacturing plant. When the plant closed I was made redundant for the first time. (Oh yes I forgot to mention I had got married and had a son before I went North. My daughter arriving four years later and so I achieved honorary Scottish nationality as I was the father of a Scot, born in Glasga' [Stobhill to be precise]).

I soon got another job and also got a DISCiPLE thingy to drive a couple of disc drives that I had salvaged from Burroughs. I also joined INDUG (70075) and as my last position at Burroughs had been in quality assurance I sent lots of letters and discs and things to Alan Miles telling him of lots of things that was wrong with the DISCiPLE. He was very nice about it and didn't tell me to p!ts off, not even once. In fact, soon many of the bugs were fixed, and what was left I got sorted out when that nice Mr Brenchley sent me the source for the DOS and said "If you're so smart then you fix 'em". [He was smart and he did fix the most annoying bugs. Bob.]

A short time later I got hold of Hackers workbench. After some tidying up I got the right to flog it so I did and bought S.D. Software from the dim sod who had it before me. I also put

together some other crummy programs that I'd written and started to flog then an all. To my most honest surprise I started to make a profit. Soon other people contacted me and asked if I would be kind enough to flog their stuff too. As I already had the company set up I did and made an even bigger profit.

It was about this time that I got redundant again, seven months on the dole and all my savings gone to pay the mortgage. Then I got another job - in fact two. (Just like busses nothing for months then two come at once). I also got most severely conned by that nice Mr Bastard sorry Brenchley into doing the Help Page. "Just do a couple and see how you get on". Three years two jobs a divorce a £7000 a year pay cut and move of house later and I have just managed to worm my way out of it, and good riddance. I'm a programmer not a bloody writer.

On the other hand it has, on occasion, been nice to receive such nice letters of thanks from those of you who were grateful for me giving my limited spare time, for no monetary gain, to produce the Help Page. Also it gave me the opportunity to meet many nice and talented people like Andy (I've already used all the space in the ROM), Bruce (I'm a hardware man really), Alan (I'll be with you in a minute), Jenny (and her lovely daughter JB), Karen (I didn't actually mean you to see that), Rose (Maker of the best cup of tea in the world), Annemarie (25 camels and a small herd of sheep and that's my final offer), Bob (Just a quick one for you), Dave (I'm feelin' a bit down at the moment), Sid (I'm only the driver), Vicky (Take my knickers off and don't let me catch you wearing them again), Simon (I've got more pseudonyms than you have), Christian (brer), Carol (I've only got a little printer), John (who knows lots of big words like floccinaucinihilipilification), Trevor (I've got some nice fish in), Brian, Steve, Ian, Bruce, Ken, Malcolm, Maureen, Tony, Elsie, Julie, and especially Clarice [I'll agree to that one. Bob].

More personal info. My hobbies include keeping tropical fish, chasing women, washing dishes/clothes, writing sarcastic letters to the idiots in the tax office and avoiding mailing lists. I work as an analyst programmer for a building society. I'm a single parent, totally bonkers. I have a criminal record for things I didn't do and I never forget or forgive a grudge.

I have a dreadful (irrational) fear of spiders and I hate being disturbed when I'm doing something. (It took me three hours to write this sentence!)

A funny thing happened at work today. We were discussing and comparing our calculators to see what the largest number was that could be handled. Without exception it was 9.999999999999999999. Then somebody threw down a challenge to see if any of them could give an answer to factorial 70. They could all handle factorial 69 but none could manage 70. So when I got home I wrote a program on Sam to calculate 70!. I would like to challenge all of you readers to have a go at it. My program took just over 30 minutes to arrive at the answer and gave it correct and in full (i.e. not in scientific format). If any one out there can do better, using only basic, then I'll send them a fiver. (Just in case you don't know what 70! is it's 1 * 2 * 3 * 4 * 5 * 6 * 7 * 8 * 9 * 10 * 67 * 68 * 69 * 70) The answer has over 100 digits in it.

[And now you all know what I have to put up with, I'm glad he admitted to being totally bonkers, it saved me the trouble of pointing it out. And even he will admit (after a few hours on the rack) that he misses the Help Page. Ed.]



A BASIC (ROM) STORY

By:- Andy Wright.

Bob has asked me to tell you about how I first got involved with computers. It began in 1980, and I have my father to thank. He is one of those people who orders anything mail-order at the drop of a hat, and he bought a ZX-80. Since his fingers look like my thumbs, and his thumbs look like saveloys, he didn't have much luck with the tiny membrane keyboard. I managed to borrow the thing on permanent loan.

Fairly soon I was hooked, although my best efforts were a modified "Wumpus" (an old, very simple adventure-style game) and a program to draw a spiral. You can get some idea of the state of the hardware and software when I tell you that I got very excited after typing in a machine-code utility from a magazine. Its function? To assist my spiral program so that you could actually see each point as it was plotted! Without the utility, you didn't see anything until after the complete spiral had been drawn.

Soon after, the ZX81 came along and I bought a kit to build one for £50. It worked! And it had better features like floating-point maths and the ability to display while running a program. Mind you, on hot days I had to use a fish-tank bubbler to pump cool air through it, or it overheated. It was also quite slow, and I became interested in machine code when I discovered how fast a simple code program could move screen memory around. My first machine code programs were hand-assembled using a list of op-codes and odd scraps of paper. However, I didn't really know how to DO anything complicated, even after I knew what each op-code did.

Fortunately, there was an actual computer shop (!) in Cambridge, and on

a visit there I was able to buy "Mastering Machine Code on Your ZX81", by Toni Baker. This was a very useful book, serving the same kind of role as Carol Brooksbank's Machine Code Without Tears. I got simple games and demos working. I was still hand-assembling, of course, since I only had 1K, and writing the programs out in longhand, since there was no printer available for the ZX81 yet.

However, a friend built me an RS232 Interface, and I could send data to a TRS-80 computer that we had at my workplace in Birmingham University Medical School. This at least allowed me to disassemble code programs (using a program on the TRS-80) and print them, on a Teletype. A listing of the ZX81 ROM took all night, at 10 characters a second! I used to try and understand a section of this while eating breakfast, before going off to do my experiments. This was educational, but difficult, since of course these were no annotations at all. This reading stimulated my interest in how interpreters worked. Later, I got interested in the Spectrum ROM and disassembled that too, then improved on it with my Beta Basic enhancements to the Spectrum's Basic. This led to my being asked to write the SAM Coupe ROM.

But to go back to 1983: I wrote 3 games for the 1K ZX81 and sold them to a company called Microgen. They were pretty good for 1K, but most people had 16K machines by then and I didn't make much. I had built up my machine to 4K with a home-made RAM pack, built a programmable character generator (which allowed UDGs), a "real" keyboard and a hexadecimal keypad, when along came the Spectrum and my ZX81 was obsolete. Early on, I discovered the Channels table, decided it was a special table for extending

the Basic (like the TRS-80 had) and told my friends I was going to add commands to the Basic. (They had criticised it for lacking ELSE.)

When I discovered that the Channels table was for something else entirely, I was too embarrassed to admit it. It was actually very hard to extend the Basic, since no provision had been made for new keywords. (My irritation at this had consequences for the design of SAM's ROM.) However, I HAD to implement ELSE, or I would look an idiot, so I managed it. This was the start of Beta Basic, because I was determined that the Spectrum should have every useful command I could think of. I think the next function I did was USING, then DELETE, RENUM and many more. I set up Betasoft, wrote a manual and had it printed, and the first version of Beta Basic went on sale in August 1983. It sold quite well and I was deep into a second version by early 1984.

By then I had to make a decision, because there weren't enough hours in the day to do both medical research and programming. At least in the short term, research was financially much safer. On the other hand, in 2 years my contract would expire. It might be renewed, but each renewal would be less likely as I got older and more expensive. Permanent jobs were rare. Besides, in research, it would take me 6 months of test-tube weighing and isotope-tracing to check out an interesting idea. In programming, I could have an interesting idea and actually have something working the same day. That decided me - I gave in my notice to the Med School.

Beta Basic went through four main versions (quadrupling in size and features) and innumerable minor variants to cope with different printer interfaces and disk drives. In fact the program still sells, in a small way, partly by word of mouth. (Is 9 years on the market some sort of record?) I still maintain stocks of the 15 back-issues of the Beta Basic Newsletter, which in its heyday had almost as many readers as FORMAT. Some

of the routines it published led later on to parts of the SAM ROM - for example, BLITZ was derived from a Newsletter article. I was really sorry when I had to close it down. Still, at least editing it it made me appreciate all the hard work Bob has to put in! And I still see a lot of my former readers' names in letters or articles in the various SAM/Spectrum magazines.

Between work on Beta Basic versions, I did game conversions from and to the Spectrum, CPC, PCW and IBM PC. At times this was tedious, but it gave me a lot of experience with different machines and programming styles. So when Bruce Gordon asked me how I'd organise a 16-colour screen memory, I knew lots of methods to avoid and plumped for the Sam's current 1 pixel-per-nibble arrangement, which is very easy to use.

My most recent work has been mainly on the SAM. I suppose it is every interpreter-writer's dream to start with a "clean sheet" and write an entire ROM. The SAM ROM was fun, but hard work, especially without a SAM for most of the time! I had to emulate as much as possible on the Spectrum, the reverse of the usual practice these days! MasterDOS taught me a lot about disk systems, and MasterBasic was a chance to add some of the features it would have been nice to have in the ROM if there had been room. Games Master, my most recent offering, is an attempt to make the graphics and sound power of the Sam accessible to the ordinary user.

The ZX80, ZX81, Spectrum and now the SAM have given me a lot of fascinating work. I am one of a fortunate minority that really enjoy what they do. (Well, most of the time!)



From TI99 To GRAPHIC STARDOM

By:- Carol Brooksbank.

About 10 years ago my husband took an external degree, one module of which required him to study BASIC programming. So that he could practice a bit at home, we bought a TI99/4A computer (well, we all make mistakes!). I decided to play around with it a bit, and got hooked on computing, but in no time I had used up its meagre memory and realised I should progress no further unless I could at least produce a listing of my programs.

To buy the necessary interface and a printer would cost about £1000 - the TI's expansion hardware was horrendously expensive - but we found that this odd-looking rubber-keyed Spectrum with four times as much memory and a dinky little silver-paper printer could be had for under £200. So we ditched the TI and bought the first of our 5 Spectrums. (We still have 4 and my sister now has the rubber-key one which is still going strong). Over the years we added Wafadrives, Microdrives and two "real" printers, an Epson RX80 and a Citizen Swift 9 colour. Before long I was using the Spectrum for everything from designing knitting patterns to running a small Library.

Then, I started taking magazines, my favourite being ZX COMPUTING. The mysterious machine code listings they published intrigued me, so down to Smith's for a copy of Toni Baker's "Mastering machine code on your ZX Spectrum". You learned the art by debugging all the listings in the book, but I don't think that was deliberate. Then I began writing my own bits and pieces, and said to my husband "I'm going to send this program to ZX", to which he gave the encouraging reply "They won't want your rubbish". A couple of weeks later came an acceptance slip and a promise

to pay £45 on publication. (Better half changed his tune "Do you think they are paying you enough?").

That was the beginning of an association with ZX which lasted till it folded. Then one day, a voice on the phone said "This is John Wase. I have found another magazine to write for, it's called FORMAT and they want you too. It's the magazine for INDUG, a user group for the PLUS D disc drive." I said "I haven't got a PLUS D disc drive". "They'll fix you up", said he and rang off.

This was my first encounter with John, who had been only a ZX byline to me before. He had tracked me down from an illustration in my last article in ZX - a ground plan of the Church I go to. John had rung the Vicarage to ask if anyone had ever heard of me, and prised my phone number from a very dubious Vicar who was not at all sure he should give my number to strange men on the telephone! I reassured him that John was really a very reliable character.

A couple of weeks later, my doorbell rang at 9 o'clock on a Monday morning, and there stood a man I had never seen before who said, "Put the kettle on, girl, while I use your loo. Then, when you've made me a coffee we'll get this PLUS D installed". John Wase had arrived in the flesh. He proceeded to rip the cable out of my Kempston E interface "I forgot to bring a printer cable but this will do. You won't need the Kempston any more, anyway, now you have the PLUS D".

It was the beginning of the best phase of my computing life - writing for FORMAT, making more wonderful friends like Bob, Andy Wright, Nev

Turn to page 23.

Software for the SAM COUPE

£12.50 SC_ASSEMBLER

If you have been reading the much praised article in the Format magazine 'Machine Code Without The Tears' by :- Carol Brooksbank and are new to the fascinating world of Machine code.

SC_ASSEMBLER is the ideal program to help you, thanks to the unique automatic autotab editor designed to help the absolute beginner.

Review in 'Outlet' Issue 53 Jan 92

"Simple enough for the beginner powerful enough for the expert".

Format vol3 no12 "A delight to use, it's certainly the one for me".

Highly recommended by Carol Brooksbank

£12.50 SC_FILER

A POWERFUL
SAM COUPE
DATABASE

99% Machine code, Data compressed to allow massive storage of data. You can set up the database to your exact requirements, with fields of any size position, colour and charset in 4 different Mode 4 layouts and printouts.

Review in 'Sam Supplement' Issue 7

"Very versatile userfriendly database" 'Outlet' Issue 47 "Most professional looking file management program".

'Enceladus' Issue 7 "definitive filing system, if you need to file anything but this". 'Fred' Issue 9/14 "I would recommend you buy SC_FILER" 'Excalibur' no3 "Best Database around 94%".

£15.00 SC_MONITOR

SC_MONITOR is an essential utility to use with an Assembler to help understand, debug machine code programs.

Single step each opcode to see what it does and the effects it has on flags, registers, memory and screen. Various special types of breakpoints will help pinpoint bugs and resets in programs. Unlike other monitors incl CP/M, this monitor copes with all opcodes, paging types on SAM without crashing.

There is also a super fast intelligent disassembler. SC_MONITOR comes with a large, comprehensive and easy to use manual with examples to help beginners

£15.00 SC_AUTOBOOT

SC_AUTOBOOT is a new exciting chip for the Coupe. When you now turn on the power to the Coupe with a disc already in the drive, (disc will not corrupt) the DOS will immediately BOOT up.

Retrs back to basic if no disc in drive No need to eject disc, turn on power, wait 3 secs, insert disc and press F9. Remains 100% compatible with the most up to date ROM 3.0 chip, which software companies guarantee software to work with 100%. The chip also has a powerful reset button to Break into any program running. The chip is easy to fit with an easy to follow manual.

£2.50 SC_PD3

A Completion of SC_PD1 (Specclone-Spectrum emulator, Disc Utility, Screen Compressor 1) SC_PD2 (Screen Compressor 2), also included as a Bonus SC_DISCLONE, a super exact clone disc copier.

FAST ORDERS

If you need any of the above items quickly, then just phone from 6pm-9pm, your order will then be despatched first thing next morning, when goods reach you, just send a cheque or postal order for invoiced items.

STEVES SOFTWARE

7 NARROW CLOSE

HISTON
CAMBRIDGE
CB4 4XX

TEL 6pm-9pm
0223 235150

Special Offer Buy
SC Assembler-Monitor
For £24 save £3.50.
Upgrade from Assembler
to SC_Monitor £12

MORE INFO

Just send a blank formatted disc & a SAE for Demos/Screen Shots/Detailed Information on current software from STEVES SOFTWARE

DUST COVERS

High Quality Dustcovers, Pure White with Blue Rim Trimming, Waterproof, Machine Washable, Non Shrink, Non Fade

£5.50 SAM COUPE

£6.50 PRINTERS

£7.50 MONITORS

If Ordering Printer or Monitor cover Please state Model.

STEVE'S SOFTWARE is a member of TEAM SAM

ANNIVERSARY SPECIAL

The Road To Personal Banking

By: Jack Gibbons.

First of all, double congratulations to FORMAT on its 5th birthday and to the not-so-humble Spectrum on its 10th birthday, from ALL of us at Hilton.

As they all say, I've been meaning to write and support the Format Team but there are always a million other things to do at the same time. Who said I should be better organized?

Well I have just finished the new Personal Filing System and copies have gone out for Beta testing. I am sure that people in general do not realise the amount of effort that goes into writing a program. And when you have nearly finished it, there is still about six months' work to do, or so it seems!

For the benefit of those new, or nearly new to computing, I thought that I would describe how I struggled to get to grips with this technological world of computers. In fact, one finds that there is so much to learn that you are always learning more and more (there is no shame in the professional world for not knowing about a particular aspect - there is usually someone else you can ask, and they usually take delight in telling you). So the secret is, if you don't know, ask.

In the summer of 1980 I was attracted by this advertisement in one of the 'dailies' for a home computer costing less than £100 that was so powerful that it could run a power station. Well, I didn't have a power station handy but I was suitably impressed - particularly as you had 14 days to get your money back if dissatisfied. So I thought that I could try and see if I was clever enough to be able to drive the thing, without risking a 100 notes (it was worth a lot more than!).

So I sent off my order and learnt my first lesson - the initials of Science of Cambridge really stands for Silence Over Cambridge - orders for computers and add-ons have to travel via a devious route (via Alpha Centauri so it seems). When the technological miracle arrived in its very small box, I thought it looked much larger in the advert and perhaps they had just sent the instruction book. After I hastily unpacked I found both manual and ZX80. (a brief note here - a ZX80 is one of the forerunners of the Spectrum which is also from the brain of Sir Clive Sinclair).

Not to be put off by size as they say, I quickly powered up my new acquisition and started pressing a few keys to see what it does. I say 'keys' although I meant that I pressed pictures of keys on the circuit board. Having burnt the midnight oil for two weeks and managed to type in example programs and make them run, if not understand them, I was convinced I was making headway, the beast was to stay.

The next stage of the waiting game arrived with release of the famous 16K RAM pack. Oh, didn't I mention that the ZX80 came with a full 1K of RAM. Skilful programmers learnt how to put a quart into a pint pot, others waited and waited for the RAM pack to arrive (S.O.C.). I say famous RAM pack because it was renowned for wobbling around the back of the ZX80 and now and then forgetting everything it was supposed to be storing - much to everyone's frustration (I believe Blu-Tack was invented at this time!).

I still found that I was not learning how to program - I needed an application that really needed computerisation. I had just finished agreeing my hand-written cashbook with my Bank statement, having made many

alterations to the balances (because I always make mistakes with arithmetic, although I somehow managed to pass my GCE). And then EUREKA! I will write a Bank Account program to do the job for me. Bank Account programs were very rare at the time (in fact all programs for the ZX80 were rare).

After much struggling I came up with my first attempt and here it is:-

```
10 LET B=100
20 GOSUB 1000
30 PRINT ,,B
40 INPUT I
50 IF I=1 THEN GOTO 100
60 IF I=2 THEN GOTO 200
100 INPUT AS
110 INPUT D
120 PRINT AS,D,,B-D
130 LET B=B-D
140 GOTO 40
200 INPUT BS
210 INPUT C
220 PRINT BS,,C,B+C
230 LET B=B+C
240 GOTO 40
1000 PRINT " ** BANK ACCOUNT **"
1010 PRINT
1020 PRINT "ENTER 1 FOR DEBIT"
1030 PRINT " OR 2 FOR CREDIT"
1040 PRINT
1050 PRINT "DETAILS DEBIT CREDIT B
    ALANCE"
1060 RETURN
9000 REM      BANK ACCOUNT
9010 REM
9020 REM      ZX80 VERSION
9030 REM (C) J P GIBBONS SEPT 1980
```

By the time the 16K RAM pack arrived I had progressed a bit further and BASIC was beginning to make sense. After filling up the RAM pack with my program I thought I would send out a few copies to try to get it published. I tried the computer groups and also a few software companies (there were only a few then). Eventually, by March 1981 I had a call from Syntax Software in Essex who were very interested. Remember S.O.C.? Well it seems that the silence extended to Essex also.

Then the big announcement came from Sinclair - change of name to Sinclair Research and the release of a new

computer, the ZX81. Obviously, incompatible with the ZX80, but you could still buy the floating point ROM and upgrade the ZX80. This meant that my 13K program had to be converted and entered into the ZX81. But then the ZX81 had a constantly updated screen - oh, didn't I mention that when you pressed a key on the ZX80 the screen went off while the computer thought about what key you had pressed?

A few more months of burning the midnight oil with the ZX81 program. Syntax Software broke their silence and placed an advert in Your Computer magazine issue 2 or 3. Someone called Mike Johnston phoned and said he was arranging a ZX Microfair in Westminster, would I like to book half a table there? Yes, I said - why not! Having painstakingly made up 10 copies of the Personal Banking System (or PBS as it became known) which seemed to take all night, I arrived at the first ZX Microfair in September 1981.

Sinclair Research had the opposite tables to my half and were demonstrating the all new ZX printer. I managed to be first in borrowing it to demonstrate its usefulness and promptly listed the PBS program (up till now one had to keep hand written copies of programs and lots of bottles of Tippex - are we allowed to advertise here Ed?).

The show was an unbelievable success - I sold all ten copies and came away with the feeling that perhaps my learning program was worthwhile after all. Up until then I didn't seriously believe that anyone would want to buy my efforts.

When the ZX Spectrum arrived on the scene a whole ten years ago, I hastily re-wrote the PBS and launched it at the Personal Computer World Show in September 1982 and have since sold over 14,000 copies of the Spectrum version. Although not heavily promoted, sales are still being made - mainly for the PLUS D version. The Spectrum version was even translated into Spanish and marketed by Menomicro (the ZX81 version was translated into

French, by the way).

As soon as the SAM Coupé became available, I decided to convert the enhanced version of the PBS which I had written for the PC. For the purists amongst you, this version runs to some 100K of code and contains no GOTO statements, being fully procedural.

Needless to say my thirst for learning gathered momentum from then on and I have been confident in furthering my knowledge of computers and languages.

Do not be put off by the "my computer is better than your computer" syndrome. All computers have their good, and not so good points. Similarly, take no notice of the school of "experts" who claim that BASIC is only a toy language and you are only a real programmer if you use Pascal or C, or whatever. Incidentally, there are many substantial systems written in BASIC in the business world - some selling for over £100,000.

The moral of this script is, of course, that you can start to learn about computers and programming (you don't HAVE to learn both) from simple beginnings and you are unlikely to ever know everything (although some people think they do). You are not expected, even as a professional, to be an expert in everything. If you do not understand anything then do not hesitate to ask for advice. Those who can answer your queries usually enjoy doing so. It doesn't matter what age or sex you are (nor which computer you have for that matter). As you get older it takes longer to understand the technology, but you can accomplish it just the same.

PS The asterisks in the Bank Account program are the only bits of code to have been carried over to the latest versions of PBS so readers are quite free to market the enclosed program, as long as they include an acknowledgement of all the hard work I have done in writing it!

Continued from page 19.

Young, Steve Nutting - all voices on the phone till the All-Formats Fairs started and we met face to face. And making postal friends I still haven't met, yet feel are some of my most valued friends, Luca Alimandi, Sergio di Lembo, Ettrick Thomson, Ian Ross.

Sam's arrival on the scene gave all of us the exciting feeling of being in at the beginning of something new and important. I truly believe that this machine should be the next step for every Spectrum owner. It has enough in common with the Spectrum to make the user feel he is in familiar territory, yet it is so advanced that the sky is its limit. The software has been slow coming, but at last programs really worthy of Sam are appearing and there are more in the pipeline.

So here's to the next ten years! Sadly I suspect that new Spectrums will soon be no more, but the existing ones are tough enough to be still going strong on their twentieth birthday. Sam will go from strength to strength, and so will FORMAT. I fully intend to be writing articles, reviews and programs if anyone still wants to read them, and if you go to an All Formats Fair in the 21st Century, and ask whether I am around, someone will tell you "That toothless old woman in the bathchair is Carol Brooksbank."



'The woman next door tells me you've grown a beard.'

PRESENTING SPELL MASTER



- OVER 80,000 WORDS
- ANAGRAM SOLVER
- CROSSWORD SOLVER
- BUILT IN, FULLY FUNCTIONAL WORD PROCESSOR
- 100% MACHINE CODE
- PERSONAL DICTIONARY
- AUTOCHECK - SPELL CHECKS WHILE YOU TYPE!
- ACCEPTS FILES FROM OUTWRITE, SECRETARY, TASWORD AND ALL MAJOR WORD PROCESSORS

AS WELL AS ALL USUAL FEATURES:

- Add, Ignore, Change a word
- Re-formats paragraph after mistake is corrected
- Allows for phone numbers, postcodes etc
- Spellcheck whole text, word, paragraph etc.

PRICE £14.99 (OVERSEAS ORDERS ADD £2)

FRED PUBLISHING, 40 ROUNDYHILL,
MONIFIETH, DUNDEE DD5 4RZ

FOR SAM

ANNIVERSARY SPECIAL

AN EDITOR'S LIFE

IS QUITE A HAPPY ONE

By: Bob Brenchley.

Well I did ask several others to tell their story - so it only seems fair that I bare my soul and tell my own. I'm not going to tell about my early years, I will save that until I become rich and (in)famous and everyone is after my full biography. Until then, here it is, Bob's life and times, and for those of you who have not met me at shows, I will own up to being minus two years old.

My working life started when I had a bust-up with my Headmaster. I wanted to do Physics, Chemistry, and Biology as three separate subjects. The school wanted me to do General Science. Now I knew I could pass Physics & Chemistry - I had done sample papers - but Biology was not my strong point. So two good passes and a fail looked better to me than one scrape-through.

So July 1969 saw yours truly out of school and looking for work. The Air Force beckoned, entry exam passed, Air-Radar Apprenticeship on the horizon but intakes full until late October. So find a temporary job - I fancied some money. Typing envelopes? Yep, I could do that, OK get myself down to the local Austin main dealer (large garage called P.Pike & Co in Exeter - alas no longer there because of redevelopment) and I had my first job - £6 per week, what riches.

Well, to cut a long story short, and I can hear the yawns from here already, I spent many a happy year in the motor trade, got married (the best thing I ever did), had my son (well my wife did, he is now 20), moved to Gloucester in '73, made redundant in the motor trade collapse of 1974/5 just after my wife announced my daughter was on the way. One year unemployed, then a job in the printing room at Walls Ice Cream. One year doing that then a transfer to the

computer section - looking after the files. Start to learn programming on an ICL 1900 mainframe computer (whole room full of large bits to do the job most desk-top machines can do today). DTPL, PLAN (the 1900 assembler language), FORTRAN, ALGOL and a little BASIC came to me over the next five years. I even started to learn the dreaded COBOL at one point - one computer language that I vowed never to touch again. Then redundancy loomed again. Walls had been taken over by Birds-Eye. Despite Walls' having the better computer department (new VAX 11/780s and an ICL 2960 mainframe) the nights of the long knives started and one by one top people were replaced or sidelined. And, believe me, that is cutting a long story short.

Now I had given up smoking in October 1980, so I had been saving my money. In 1981 I saw an advert for the ZX80 and thought I would send off for one. A week later a leak in a professional computer magazine led to a phone call to Sinclair Research to demand that my order should be changed to one for the new ZX81 (even though they were not admitting such a beast existed). Twelve weeks later my 1K ZX81 arrived and a love affair started (the one I could tell my wife about that is). Six weeks later the 16K RAM pack arrived and real work began. Evenings, weekends, even early mornings before rushing off to work, I was addicted.

I started to write little programs and I also purchased a few. The standard of commercial programs available in the closing half of 1981 was \$!#!% awful. I can do better than that I said. Oh yes said everyone else, prove it. So I did. My first commercial program was released just before Christmas 1981. Called MINEFIELD it sold about 50 copies

through local shops and one mail-order advert. Three others followed, none sold very well but then I didn't push them very well.

1982 saw the launch of the Spectrum and as soon as I got my hands on one I set about writing a game of GOLF. 16K, all in basic, and W.H. Smiths accepted it as part of their second batch of Spectrum titles. 9,000 tapes in less than 3 months, that was what a Spectrum game sold in those days - now that level of sales are only reached by some of the top selling games. Back then users were hungry for anything they could get, I'm not saying GOLF was that good (although I still find people with copies even now) but it was available and cheap (it cost just £3.75 when most other items were £4.95-£6.95).

While I continued to write some software myself it is true to say that the company, R&R Software, became more and more reliant on other programmers. As 1983 drew to a close our range was growing and we started to produce for other machines, the Oric and the Memotech took up a lot of time. In fact several of my programmers were involved in the ROM on the Memotech and I flew with the first three fully working MTX machines to Johannesburg in October 1983 to show the machines at what was then the largest computer show in the southern hemisphere.

1984 saw a massive investment of time and effort in overseas markets (the US and South Africa in particular) and in 1985 a move towards selling software to other companies, Mastertronic started with several of our titles as did several other budget houses. The era of big sales was coming to an end though, our 1984 success, TITANIC sold only 4000 copies in the UK because the 'so called' distributors had taken a hold on the UK market and they couldn't handle a round of drinks let alone sell software - although it did sell 6000 in France because it won a major prize over there. Still, with mail-order forming a very small part of the UK market we had to rely on the overseas

side to make a profit.

In 1985 R&R Software collapsed. Our distributor in South Africa - ZX Africa Pty - went bust owing us over £60,000. My financial director had not done his job, so the export guarantees were not in place, so R&R bit the dust. Over the following two years I and a few programmers still managed to scratch a living out of the Spectrum, selling a few programs to budget software companies - sometimes even getting paid for them. And I also did some consultancy work with small businesses who wanted to computerize their operations.

September 1986 saw me at the Personal Computer World Show at Olympia. I was: a) trying to track down a few people who owed me money; b) looking for a free lunch; and c) looking for any free samples I could get hold of. What did I find? Two men and a circuit board that was going to change my life. There was this stand you see, labelled ROCKFORT PRODUCTS and on it were several men of Indian origin who were busy selling disc boxes and other bits and pieces. Well these sort of stand are two a penny at shows, but in one corner I spied a Speccy - with a disc drive attached - lovingly attended by two men obviously not of Indian decent.

Now at this point I will point out that several of my most annoying programmers had been badgering me for some time to buy them development systems (running on PCs and costing mega bucks) but I had resisted. Honestly the youth of the day - tape was good enough when I started, and I had already got the Microdrives - what more did they expect!

Well to cut a long story short - which I know I'm not very good at - I spoke to this nice man called Alan Miles (I still have the card he gave me in my file). He explained that the device was called a DISCiPLE, apologized for the case not being ready (he's good with that excuse) and introduced me to his partner Bruce Gordon. Bruce was the technical guy,

him and me had long chats before he was called away to demo the network operation to some educational people. Alan and I arranged a meeting in London the following week. You see I had this idea, I already had several disc drives which we used for BBC development (which was not making money at that time - the snobs that owned BBCs were not interested in budget software which was all we were doing) so if I could purloin a couple of DISCiPLE interfaces for MGT/Rockfort I could keep my programmers happy.

Well, I got my DISCiPLEs (I had to pay for them though) and I went home to play. Oh boy! What power, what speed, what....

Ok there were faults, too many for my liking, but I had told Alan I would report back to him. Letters and long telephone calls later and a trip to London produced the new version 2 ROM. Much improved, but Bruce could still do better.

I was now a regular visitor to North London, Bruce & I spent many dinner hours at the local chip emporium talking about the DISCiPLE and this idea he had been working on for a computer - 64K RAM, 64 colours, Spectrum compatible, and all for under £100. Those were the days.

Still, during one such visit to London (March 1987 it was) I met John Wase who was then writing for ZX Computing. He was there to talk with Alan about doing a monthly column in ZXC for the DISCiPLE, just like the one he already wrote covering the Opus Discovery. Now to this day I don't know why I did it - but during the afternoon meeting I piped up with the idea "I could form a user group". That was where my life really changed.

In May 1987 INDUG was launched, at the same time as the version 3 ROM for the DISCiPLE. In fact I conned Rockfort into sending out my Intro issue of FORMAT with the letter that was announcing the version 3 ROM to existing users during May, June and

July. As I have said before, I expected about 200 members by the end of the first year, I reached that by the end of the first month.

The first real issue of FORMAT went out in August 1987. 16 pages, all written by me, 250 copies printed, hand collated and stapled, and posted out. A new era had arrived. By the end of the first year membership was over the one thousand mark and FORMAT was growing in size.

In 1990 we expanded into new office space and took on Karen, who charmed all the male visitors but couldn't use the computer so she had to go. Then the wonderful Jenny arrived - equally charming, but with none of the short-comings of her predecessor. She is just as insane as I am, so the office frequently resembles a mad-house, but without her very little would get done. The old saying is true, you don't have to be mad to work here - but it helps if you are.

Well now five years have passed. I have had the pleasure of producing over 60 issues. I have had the even greater pleasure of making so many friends amongst FORMAT's readers and the fantastic band of contributors we have built up.

So what of the future? Well as I write this the rescue package for SAM is beginning to come together, the Hobbit looks set to replace the Spectrum that Amstrad has so stupidly run-down and abandoned, and INDUG and FORMAT look good for another few years yet. Now what shall I plan for the tenth birthday issue?

I never thought I would ever become involved in publishing, but FORMAT is now a way of life. The Spectrum & SAM are wonderful machines to work with, far better than the PCs I so often come to blows with these days. The future is before us, we may not see its secrets until it is ready to unfold them, but you can rest assured that I (and I hope many of you reading this) have only just started on this adventure with computers.

PBT ELECTRONICS

P.B.T. Electronics Ltd., Unit 17, Port Talbot Workshops, Addison Road,
Port Talbot, West Glamorgan, SA12 6HZ. Tel No. 0639 885008

SAM COUPÉ 512K COMPUTERS

SAM Coupé + 1 Disc Drive.....£199.99
SAM Coupé + 2 Drives.....£275.00
SAM Internal Disc Drive.....£79.95
SAM 256K RAM Expansion.....£29.95
SAM Comms Interface.....£29.95
SAM External Disc Interface...£29.95
SAMCO Mouse.....£39.99
SAM Technical Manual.....£16.99
SAM MasterDOS.....£15.99
SAM Dust Covers.....£3.99

DOT MATRIX PRINTERS

Citizen 120D (Parallel).....£139.99
Citizen 124D.....£195.50
Citizen Swift 9 Colour.....£199.99
Citizen Swift 224 Colour.....£269.99
Citizen Swift 224E Colour.....£299.99
Seikosha SP1900.....£124.99
Seikosha SP2000.....£139.99
Printer Stands.....£4.49
SAM Colour Dump Software.....£8.99
(FREE on request with Swift 9/224 Colour printers)

CABLES & CONNECTORS

Parallel Printer (BBC/+D).....£7.99
Parallel Printer (+3 Type).....£7.99
Serial Printer Spectrum Type...£8.99
Spectrum Cassette Leads.....£1.99
SAM Scart to Scart.....£9.99
SAM Dual Joystick Adaptor.....£7.99
BBC/+D Dual Drive Connector...£14.99

* SPECIALS *

Lockable 3.5" Disc Box - 40....£3.99
Lockable 3.5" Disc Box - 80....£5.99
3.5" Bulk DS/DD Discs in 10s...£4.00
3.5" 80Trk Disc Drives.....£99.99
Citizen 120D Printer Ribbons...£3.99
MT81 Ribbons.....£4.49
Monitor Dust Covers.....£4.99
Printer Dust Covers.....£3.99
Star LC10 Ribbons - Black.....£4.59
Star LC10 Ribbons - Colour.....£7.99
3.5 or 5.25 Disc Cleaning Kits.£2.99
Printer Switch A/B.....£23.99

© SPECIAL FORMAT OFFERS ©

Citizen 120D Parallel Printer Pack	Citizen Swift 9 Colour Printer Pack
£155.00	£225.00

Both packs include Printer, SAM Parallel Interface and Cable.
Colour Dump software also supplied with Swift 9.

MGT DISC DRIVES AND PLUS D INTERFACES REPAIRED WITH 3 MONTH GUARANTEE.
Please phone before sending repairs

BLUE ALPHA'S SAM PRODUCTS

NOW PRODUCED BY P.B.T.

THE JOY-MOUSE (works with FLASH + all other current software) £29.99

SOUND SAMPLER - Complete with software and FREE microphone £39.99

VOICE BOX - Make your SAM speak to you. £29.95

**** Extra Special INDUG Members Offer ****
Buy Voice Box and Sound Sampler Together For Just **£54.99**

All prices include VAT at 17.5%.
POSTAGE & PACKING: Printers/Computers £5.00 All other products £1.00
Make Cheques/Postal Orders Payable to PBT Electronics.
Allow 28 days for UK mainland delivery.



THOUGHT SPOT.

By:- Jeremy Cook.

Hello and welcome. Did you miss me? My apologies if you did. No prize puzzle this month, but there is some mention of a past prize puzzle, which may interest some of you. The regular amongst you will know that I like to provide a varied selection of puzzles for your er... puzzlement, and I hope that this month is no exception. So what are you waiting for?

ARS MAGNA

The title is of course an anagram of ANAGRAMS. Below is a selection of anagrams, which bear some relation to what they are anagrams of. For example, "best in prayer" is an anagram of "presbyterian". How many can you unravel?

1. moon-starers
2. it's in charity
3. enraged
4. voices rant on
5. tender names
6. court poser

IN SEQUENCE

Complete/continue the following sequences (the dashes show where something is missing).

1. I IX IV XII VII -
2. Y T I L I G A L A T N - -
3. 100 200 400 800 - 5000 10000
4. A S D F G H - - -
5. 1 4 9 16 27 - -
6. N E D U I T -
7. 6 15 18 13 1 -

RIDDLES

Can you solve these riddles?

1. What letter is most useful to a deaf woman?
2. Why is a bad cold like a great humiliation?

3. Why is a schoolboy being flogged like your eye?

4. What ship has two mates, but no captain?

REBUS

Here are a couple of rebi (rebuses?). Can you work out what words or phrases are being depicted?

- | | |
|---------------|---------------|
| 1. PAT
EHT | 2. HIJKLMNO |
| | 3. O N
N O |
| | O N
N O |

That's the end of this months puzzles. Below are the solutions to previous puzzles and a bit about a previous prize puzzle. If you have any comments, adverse or otherwise, on any aspect of Thought Spot, do send them to me at the usual address, which appears every other month. Do look in next month. Cheerio.

----oOo----

SOLUTIONS TO JUNE'S PUZZLES

Cryptogram: "My dear readers there is no need to decode this".

That's Odd: The odd one out is ENGINEER, all the others have numbers in them (netWork, frEIGHTer, etc). A suitable replacement would be BRAININESS, although there are many other possibilities.

Three Wise Men?: The king kept sixteen of the wise men: seven blind, five seeing, four blind/seeing of one eye. The blind men are of course blind in one eye, the seeing men see with one eye, and a man blind in one eye only can see with the other.

Algebra?: D=12, N=11; think of months of the year.

Spots of Bother:

```

00 22      0 2
           0 1
1  2
1  0      2  0
           2  1
21 10      11 03

1 20 31 3
0  0

2  1
1  1

3  2
3 00 22 3

```

Enigmagram: I'm afraid I screwed up. One of the stars was in the wrong place. Sorry. The four words were RADIUM, HELIUM, CARBON and NICKEL. The key anagram was supposed to be CHLORINE.

A Competition: The order was Col first, then Del, Al, Earl, and Bill last.

-----oo00oo-----

Prize Puzzle Results No.12 - Roundabout

I received entries from eight people, and judging them has proved as difficult as usual. One problem was my wording of the puzzle, which was slightly ambiguous, although I believe that the interpretation I intended was indicated more than any other. I got three basically different interpretations and about half the programs continued the turning indefinitely, with the others just performing a single rotation and then stopping.

The programs of Craig Turberfield, Ettrick Thomson and John Geisow asked for all the details before drawing anything, then drew the n-sided polygon (n-gon) centered on the coordinates given. Then the polygon was rotated by the angle given around its centre. David Wood's program was

similar, but drew the polygon after the number of sides was input, and then redrew it (rotated the given angle) at the coordinates given.

The interpretation I wanted was supplied in varying degrees by Tony Jeenes (one of three programs he sent in), Adrian Jones, Lars Jermius and Colin Felgate (who also provided a mouse controlled version!). These programs first draw the polygon at a fixed point, and then they rotate it by the required angle around the coordinates given. If you can't detect the subtle distinction between this and the other way, try the winning program below.

The only other main thing that people did differently was the actual drawing of the n-gon. You can either calculate the coords of each vertex by using the centre point and multiples of the angle $360/n$. Or calculate each vertex from the previous one using just $360/n$. The second method uses the sin and cosine of the same angles each time, so they only need to be calculated once at the beginning. Thus method two is better for drawing the shapes quickly. The program below has examples of both methods.

This problem was such that there wasn't really a great deal of difference between the programs, so it was quite a difficult choice. I decided in the end that the winning program should be that of Lars Jermius; some parts had room for improvement, but it was quite well thought out.

The program is reproduced below, with some changes, which I hope you don't object to, Lars. It is written for Spectrum. An example of method one mentioned above is in lines 90 to 120, and method two is used in lines 310 to 350. In lines 320 and 330 the SIN's and COS's are of the same angle each time, and so could be calculated outside the loop. The polygon is drawn at the subroutine at line 400.

```

10 CLS
20 PRINT "How many sides?"

```

```

30 INPUT n
40 DIM x(n): DIM y(n)
50 LET a=2*PI/n
60 PRINT "Which size? (size<78)"
70 INPUT f
80 IF f>77 THEN GOTO 60
90 FOR i=1 TO n
100 LET x(i)=127+f*COS (i*a)
110 LET y(i)=87+f*SIN (i*a)
120 NEXT i
130 GOSUB 400
140 LET xmin1=INT ((127+f)/2)
150 LET xmin2=128-(176-2*f)/2
160 LET xmin=xmin1-(xmin1-xmin2) AND
  D xmin2>xmin1
170 LET xmax=255-xmin
180 PRINT "x-centerpoint? ";xmin;"<
  =x<=";xmax
190 INPUT cx
200 IF cx<xmin OR cx>xmax THEN GOTO
  180
210 LET ymin=87
220 LET d=f/SQR ((127-cx)^2+(87-ymin)^2)+1
230 IF d<ymin THEN LET ymin=ymin-1:
  GOTO 220
240 LET ymax=175-ymin
250 PRINT "y-centerpoint? ";ymin;"<
  =y<=";ymax
260 INPUT cy
270 IF cy<ymin OR cy>ymax THEN GOTO
  250
280 PRINT "Angle?"
290 INPUT d
300 LET r=PI*d/180
310 FOR i=1 TO n
320 LET z=(x(i)-cx)*COS (r)+(y(i)-cy)*
  SIN (r)+cx
330 LET y(i)=(y(i)-cy)*COS (r)-(x(i)-
  cx)*SIN (r)+cy
340 LET x(i)=z
350 NEXT i
360 CLS
370 GOSUB 400
380 GOTO 310
390
400 PLOT x(1),y(1)
410 FOR i=1 TO n-1
420 DRAW x(i+1)-x(i),y(i+1)-y(i)
430 NEXT i
440 DRAW x(1)-x(n),y(1)-y(n)
450 RETURN

```

I'm now in the process of catching up with past prize puzzles, so you should get your bits and pieces back soon (provided you sent an SAE). Please bear with me, thank you.

>> COMING SOON <<

As we start the sixth volumn of FORMAT we thought we would wet your appetite with a brief look at what is in store for you over the next few months.

PROBLEM SOLVING

Start solving problems
THE COMPUTER WAY.

HACKERS CORNER

Mark Lambert gets to grips with
converting more programs to disc.

MACHINE CODE WITHOUT THE TEARS

Carol Brooksbank continues
her highly acclaimed
machine code tutorial.

HARDWARE DESIGN

How do digital electronics work?
Well find out as Adrian Parker's
series takes you step-by-step
into the world of computer hardware.

+3 TOPICS

The neglected +3 gets its own column
contributions urgently required.

BASIC CONVERSION

Not every version of Basic is as
easy to understand as Sinclair and
Sam Basic. This series highlights
some of the differences and helps
you convert from other machines.

PLUS OUR USUAL MIX of

SOFTWARE & HARDWARE REVIEWS,
SHORT SPOT, DISC UTILITIES, MUSIC,
GRAPHICS, MACHINE CODE, ETC.

IN FACT EVERYTHING WORTH READING FOR THE SPECTRUM AND SAM.

All these articles are either ready
to run or in a very advanced state -
keep reading FORMAT, you WON'T want to
miss anything.

HOBBY & COMPUTER FAIR

A new concept in consumer fairs. Covering Computers, Knitting and Stitching, Models and Crafts, Music, Records and CDs. In fact something for everyone.

SEPTEMBER FAIRS

Saturday 19th	The Rivermead Leisure Complex, Richfield Avenue, READING. Jct 12 M4
Sunday 20th	The Brighton Centre, Kings Road, BRIGHTON. off A23
Saturday 26th	Wembley Conference Centre, WEMBLEY
Sunday 27th	The Kent County Showground, Detling, MAIDSTONE. Jct 7 M32

All Fairs are open from 10.00am till 4.00pm
Admittance £4 on the door

Prize Draw at 3.00pm £100 voucher to Spend at the Fair

For further facts about the Fairs and for
Exhibitor information
contact John Riding
0225 868100 fax 0225 868200

SAMPOKE

By:- David Zambonini.

This is a simple basic program that runs with the code from the Spectrum emulator supplied on the SAMDOS disc, coupled with MASTERDOS. It is designed as an AUTO file for a disc on which Spectrum emulations are placed. The program gives a full menu for loading the emulations from disc. However, the program also gives the additional functions of an automatic cheat POKER and a very short, simple hacking routine. I have found it very useful for storing Spectrum emulations, being able to store fifteen emulations on disc which are automatically available from booting. Here it is:-

```

10 REM Version 1.3 for MASTERDOS
20 CLS R#: POKE DVAR 0,0
30 LOAD "skelt.bin"CODE 32768: CALL
  32768
40 LOAD "modif.bin"CODE 32256: CALL
  32256
50 LOAD "snapt.bin"CODE 32768: CALL
  32768
60 LOAD "trans.bin"CODE 16384
70 LOAD "patch.bin"CODE 32768
80 POKE (65536+14446),255
90 IF PEEK 23732=15 THEN POKE 80120,
  12: ELSE POKE 80120,28
100 DIM di$(16,12)
110 DEVICE d1: LET d$=DIR$,n=1
120 DO
130 LET f$=TRUNC$(d$( TO 10)),d$=d$(
  11 TO )
140 IF f$(LEN f$-1 TO )="." THEN LET
  f2$=f$( TO LEN f$-2): PRINT AT n
  ,10;f2$: LET di$(n)=f2$,di$(n,11)
  =(HEX$ FSTAT(f$,1))(1),di$(n,12)=
  (HEX$ FSTAT(f$,1))(2): LET n=n+1
150 LOOP UNTIL LEN d$=0
160 LET m=0,pa=0
170 CLS
180 LET n=1
190 DO
200 LET f$=di$(n)( TO 10)
210 PRINT AT n,10; PEN 12+(2 AND m=n)
  :HEX$(n-1); " :f$: LET n=n+1
220 LOOP UNTIL di$(n)=" "
230 IF m>0 THEN PRINT AT n,10; PEN 14

```

```

; "0Z CHEATGRAB"
240 GET m$
250 IF m$="z" THEN LET mm=m: GOTO 410
260 IF m$<"0" OR m$>"9" THEN GOTO 240
270 LET mm=m,m=VAL (m$)+1
280 IF m<1 OR m>n THEN LET m=mm: GOT
  O 240
290 IF m=mm THEN GOTO 330
300 LET pa=0
310 LOAD VAL (di$(m)(11 TO ))
320 GOTO 170
330 REM Spectrum Cheat POKer
340 LET cn$=TRUNC$( di$(m)( TO 10))
350 IF cn$="DIZZY" THEN POKE 119752,0
360 IF cn$="TRANS AM" THEN POKE 90982
  ,195
370 IF cn$="MINER" THEN POKE 100672,0
380 IF cn$="IMPOSS" THEN POKE 106721,
  0: POKE 103242,0: POKE 103075,0
390 CALL MODE 1
400 GOTO 170
410 LET cn$=TRUNC$( di$(m)( TO 10))
420 CLS : PRINT AT 0,0; PEN 14;"Lives
  POKE for ";cn$
430 PRINT PEN 12;("Primary" AND pa=0)
  +("Secondary" AND pa=1)+ " attempt
  .": PRINT PEN 12;"Enter number of
  lives."
440 INPUT "Present Number: ";lives
450 LET lives=INT lives: IF lives<0 O
  R lives>255 THEN PRINT PEN 12;"LI
  VES IN RANGE 0-255 (INTEGER).": G
  OTO 440
460 IF pa THEN GOTO 630
470 LET s$=""
480 REM SEARCH ROUTINE
490 LET sa=88832,mu=0: CLS
500 DQ : LET m$=MEM$(sa TO sa+511)
510 PRINT AT 0,5; PEN 6;"MEMORY SEAR
  C HED: "; PEN 15;INT (mu/2); PEN 6;"
  K"
520 PRINT AT 1,5; PEN 6;"MATCHES: "; P
  EN 15;LEN s$/2
530 LET c=1
540 DO : LET L=INSTR(c,m$,CHR$ lives)
550 IF L=0 THEN GOTO 580
560 LET s2=sa+L-65537: LET s$=s$+CHR$
  (INT (s2/256))+CHR$ (s2-(INT (s2
  /256)*256))
570 LET c=L+1

```

```

580 LOOP WHILE c<513 AND L<>0
590 LET sa=sa+512,mu=mu+1
600 LOOP WHILE sa<131071
610 LET pa=1
620 GOTO 390
630 CLS : LET s3$="": PRINT "<SEARCHI
NG>"
640 DO : LET s2$=s$( TO 2),s$=s$(3 TO
)
650 IF PEEK ((CODE s2$(1)*256)+CODE s
2$(2)+65536)=lives THEN LET s3$=s
3$+s2$: PRINT AT 2,0; PEN 15;LEN
s3$/2; PEN 6;" found."
660 PRINT AT 1,0; PEN 6;"Left:"; PEN
15;LEN s$/2;" "
670 LOOP WHILE LEN s$
680 LET s$=s3$
690 IF LEN s$=0 THEN PRINT "Complete
Failure!": PRINT "<PRESS ANY KEY>"
: PAUSE : LET pa=0: GOTO 390
700 PRINT AT 3,0;"(L)ist or (R)eturn"
710 GET i$: IF i$<>"l" AND i$<>"r" TH
EN GOTO 710
720 IF i$="r" THEN GOTO 390
730 SCROLL CLEAR
740 LET s3$=s$
750 DO : LET s2$=s3$( TO 2),s3$=s3$(3
TO )
760 LET nv=CODE s2$(1)*256+CODE s2$(2
)
770 PRINT PEN 6;"COUPE  :"; PEN 15;n
v+65536
780 PRINT PEN 6;"SPECTRUM:"; PEN 15;n
v
790 PRINT
800 LOOP WHILE LEN s3$
810 PRINT "<PRESS ANY KEY>"
820 PAUSE
830 GOTO 390

```

First, FORMAT a new disc with MASTERDOS as the first file. The basic program should follow, as an auto file which auto-runs at line 10. Now find the SAMDOS disc which contains the Spectrum emulator, and copy the five emulator code files to the new disc. (copy "dl:*bin" to "dl:*bin"). The five files are skeleton, modifier, snapshot, translator and patch utility. The disc is now ready for the Spectrum emulations, simply copy snapshots which use the SAM Spectrum emulator to the disc (up to 15 per disc), using the filename extension of ".s". Exiting to the menu is achieved by pressing the break button followed by 'x'.

The two additional functions can be accessed once a snapshot has been exited as described above. Once you are back at the menu the last program to be accessed is highlighted in yellow. If the same program is then re-selected it will carry on from where it left off, with any cheats added if they are in the basic program. It is essential that the names on the disc and in the program are the same, or no POKEing will occur. Four examples are included in the program, for DIZZY, TRANS AM, MANIC MINER (Spectrum emulation!) and IMPOSSABALL games. Additional POKES can be added in the same manner, remembering to add 65536 to the Spectrum POKE. The program can then be renumbered and resaved to disc (it is better to enter the POKES in batches).

The second function is selected by 'Z' on the menu, and should find at which address the lives are stored (or otherwise, anything that is assigned a numerical value and which changes can be searched for). Once selected, the number of lives on the game is input, a memory search occurs and the game is restored. Once a life is lost, the snapshot should be exited and the function re-selected whereupon the number of remaining lives is input. There will be the option to display any matches found, if more than one number is matched, then it is possible to return to the emulation and try again. Both the Coupe and Spectrum Poke addresses will be given, which will give the address to poke the number of lives (+65536 offset included for Coupe). It is worth noting that there are several methods of storing the number of lives (or otherwise) and so a +/- 1 offset may be required, or each digit stored in a separate address, or as its ASCII code. This should be taken into consideration both when searching and POKEing.

I have made improvements to my own version by using a 1Mb RAM pack and MasterBasic. Other improvements to the facilities are possible, if I come up with some more I may do a follow-up some day soon.



YOUR LETTERS



Dear Editor,

I have been a reader right from issue one of FORMAT and I am amazed how you manage to go on, month after month, without appearing to repeat yourself. Since the sad death of ZX Computing you have remained the only lifeline for the Spectrum (and now SAM) users.

Others have appeared briefly on the scene only to vanish (often with some of my money) after a few issues. I was proud when FORMAT was allocated an ISSN reference number, it showed FORMAT had arrived and was here to stay.

Well done FORMAT, well done and here's to the next five years.

Yours sincerely, Brian Drew.

Dear Editor,

So 10 years for Spectrum and 5 years for FORMAT - quite an occasion to celebrate I agree, and many thanks for "FORMAT".

Yes, I am reminded that I was a youngster of 72 when I poked my nose into the Barnstaple branch of "Menziess" and had my first glimpse of a Speccy. The young, very enthusiastic salesman who obviously knew his stuff and promised me after service telephone help sealed the deal. And out I proudly walked with the package, ready to make all the necessary excuses to my better half. They were happily accepted, as was the excellent after sales help from my cheerful salesman. I have never looked back.

The finest retirement occupation anyone could invest in. Just very sad that Wizzard Sinclair could not hang on.

I've owned each of the Spectrum family except the Q.L. and am now enamoured with my Coupé of 18 months ownership.

Yours sincerely, Basil Lankester.

Dear Editor,

As the worlds worst computer user, I derive much satisfaction from any success I achieve with my spectrum. I use it for games, video titling, word processing, databasing, and DTP. Not bad value for £90.00 I paid for my 128 two years ago.

I have owned a spectrum since 1982 but never progressed beyond basic, preferring to use the animal instead of training it. So I purchased PCG's DTP and have sat agog at this use of my machine. I wrote to Carol Brooksbank, and plagued Bob Brenchley as to my lack of expertise and slowly my eyes have been opened. Until, in a fit of creativity I attempted to merge graphics with text.

For 2 days (I am now disabled and time is cheap) I attempted every combination of commands to force the the program to DTP. But it thwarted my every move. I rang Bob's answering machine, but it couldn't help me. I rang directory enquiries; 40p to tell me there was no such company as PCG. They need an "oligy" in something. I found an old pamphlet with another number on it and rang that answering machine. It couldn't help either. Back to Bob; "No Idea"; Great. Ring the alternative number just for fun. AN ANSWER!!!! How do you enter graphics? You enclose the title of the graphic in square brackets (shift Y & U).

Why didn't I do it? Because my edition- of the manual didn't tell me in words of one syllable. Well done PCG for being so quick in sorting my problem out, (once I had found you), and three cheers for aftersales service, a very rare commodity these days. Anyone for graphics???

Yours sincerely, Barry Twyman.

Well Barry, I'm very pleased you managed to short out your problem in the end. Although I am surprised at

your success in tracking down the very elusive PCG and even more surprised that you managed to get a problem answered without them selling you an Atari ST. The handful of people who manage to get through all seem to report on the way they rubbish Spectrum and even more so the SAM.

My advice to people is to steer clear of PCG or whatever they call themselves this week. Ed.

Dear Editor,

Herewith cheque for another year of splendid education and entertainment.

It doesn't seem a year ago I was sending my last sub. For your hectic operations I expect it seems even shorter!

I thank my stars that I don't often have too many target dates to meet. Carol's articles on machine code are brilliant, rather to be expected, even so, a remarkable achievement.

I cannot wait to get to each month's pages by John Wase and good old Nev! I don't play games but Mark's columns have some useful observations and I like his style.

I suppose you must have some awful spelling checker program to assist your typesetting. I do not believe that any other reason can explain the irritation "can not" instead of cannot there are several other words which get split in a similar way.

What's that you say? If that's all he has to gripe about then good luck!

Sincerely though, FORMAT has been a stalwart friend in need and the fact I can go to my Spectrum with a happy heart instead of the original trepidations of four or five years ago is due to my DISCIPLE and your assistance. KEEP GOING!!!

Best Wishes, Leslie Pollard.

Thank you Les, your letter is much appreciated. Yep, I do use a spell checker - although the overworked and overpaid (or is that underpaid) Jenny does proof read just before we print out the final text. However I try to write in such a way that the text can be read aloud, and to my mind CAN NOT reads differently than CANNOT - now Jenny often corrects things to one

word while I recorrect to two words - because that is how I want people to read it, to give stress to the words.

Still, I'm sure that given your long and loyal membership we won't fall out over my little idiosyncrasy will we. Ed.

Dear Editor,

I am wondering if you would be kind enough to pass on to Mr Alan Miles the enclosed letter which is a personal one but not necessarily all that private as I am sure that many others will have similar sentiments.

I am sorry to bother you in this way but in the present circumstances it is not very obvious how to get in touch with Mr Miles. I understand from a recent telephone call to your office that you are busily concerned, no doubt with others, in mounting a rescue operation and would like to wish you every success. The Spectrum and the Sam have given me a lot of pleasure and I rebel against moving to another computer and allowing the big boys of commerce to dictate my personal life style.

Yours sincerely, Ian Ross.

I passed on your letter Ian, it actually eased Alan's pain before the creditor's meeting. I'm sure your kind words meant a lot to him. Bob.

Dear Editor,

Last Thursday I heard that SAM Computers Ltd had sadly gone into liquidation, another victim of this recession. I would like to say I sympathize with everyone at SAMCO for what has happened as I (in my line of work) have been involved with other companies in the same situation.

As a SAM owner, I have had to contact SAMCO on several occasions when I had problems. I would like to say how much I appreciated their help and advice and to thank them all for a terrific after-sales service. I wish them all the very best for the future.

In the meantime I hope FORMAT will still support the SAM and may be some one will take over where SAMCO left off.

Yours sincerely, D.Westray.

Dear Editor,

I was so sorry to hear of the failure of SAMCO to continue trading. It has obviously been very difficult for them to keep their head above water. I am sure all of us who own and use SAM's would like to thank Alan for his efforts after the collapse of MGT and at least we all now have a useful computer with plenty of PD Software.

Is this really the end? As I do not know the final position of SAMCO I cannot tell but I still feel that there is a place for a cheap, simple computer.

If there is anything I can do to help, short of purchasing the company, I will certainly try. You still have a lot of loyal owner/users who also believe in the product.

Yours sincerely, J.J.Flood.

Thanks John. Many similar letters have come in over the past month and hundreds of telephone calls. What we now need is everyone's help - both financial (every penny helps) and in other ways. Spread the word about FORMAT, we will show people what SAM is capable of. The Spectrum and Sam are great machines and it is up to us all to keep them alive and help them to prosper. Ed.

Dear Editor,

With much regret I have decided not to renew my membership of INDUG this year.

My "Rubber key" Spectrum was bought as a toy by me as I was fed up with getting "Error" from the demo machines in the dealers while my small son was doing all sorts of clever things. This toy turned into a tool, grew a full size keyboard, a proper printer, PLUS D and drive; and turned out a lot of stuff for my employers which previously had been done longhand.

The legends on the keys are now worn to the point of invisibility, my son has grown up and talks of 486's etc, and no longer uses it for games, an IBM clone has appeared at work, which is assumed to be my responsibility on top of my other duties, and my free time seems to get shorter as I get older. I read something in FORMAT, dig

it out, and spend ages trying to find the right key, after working with the IBM. So I'm retiring it, the rubber keyboard is in mint condition, and who knows, it may be worth something someday; and an IBM is now installed at home for work compatibility, and the lack of time to program at work!

I have had much pleasure from the serious nature of the contents of FORMAT, and have learnt much. I also received help from you when converting to PLUS D from a Microdrive and would like to convey my thanks for the contribution made by you and your staff to the greater understanding of computers in general and Spectrums in particular.

All my work programs have been translated into GW Basic for the IBM clone at work, (this is not as easy as one might think as Sinclair Basic allows computed GOTO, GOSUB, and of particular interest to me, computed RESTORE, which GW doesn't, so another way has to be found!) but I will have fond memories of the friendly editor on the Spectrum every time the IBM halts a program with an error at run time!

So, the end of an era for me, maybe when I retire I'll have time to return to old faithful, I have packed it all away complete with discs and books, at least the domestic department is not now on about two computers!

Yours sincerely, John Littler.

The only thing I can say about this letter is - He'll be back. Over the years I have seen more people return to the Spectrum after PC inflicted brain damage than for any other reason. Oh yes, he mentioned in his full letter about a Spectrum emulator for PCs. Well I hope to have a review of just such a beast quite soon. Ed.

Dear Editor,

At last! I've got round to writing to FORMAT. I'm always full of good intentions, but it has still taken me two years to write to you.

My history has been ZX81, Spectrum 48K and now SAM, so I've seen magazines come and go - I wish you were around 15+ years ago (perhaps you

were... the early ZX81 years were rich in small enthusiastic individuals making their first step). Perhaps you remember my early days as MINDSEYE through Orwin Software (RIP), or my one 'hit' W.T.H.A.S. through Silversoft. (if you need an explanation of the abbreviation... you don't remember the game!)

Back to the point of this letter. Apart from appreciation of your well balanced mag (I must admit I look forward to getting my copy) I do still need some advice. There have been several tactical/ wargame games recently available on the 128K Spectrum - Space Crusade, Carrier Command etc. These will only play on 128K machines so my 48K and SAM are useless.

But there is a solution available for me. Many Spectrum users are selling off their machines at reasonable prices. If I knew which version to buy, I could indulge my wargaming desires. The trouble is, what is the difference between 128, +2, +2A, +3 and so on? Which are compatible with the software mentioned. Which use disc/tape/etc?

So how about an explanation/review of the various Spectrum models, with explanation of the compatibility of software. I'm sure many amateurs, and more experienced (but ignorant) like myself, would welcome clarification.

Yours sincerely, P.Rushton.

I remember Silversoft very well but the names of games from that far back presents more of a difficulty.

Any Spectrum is better than no Spectrum at all but the order you give is also the order of incompatibility. Just about anything will run on the old black Sinclair 128 while only a handful of old titles will not run on the +2. Of course new titles should run on them all. But if you do get a +2A the get the conversion kit from B.G.Services to turn it back into a +2, this will get round most of the problems and allow you to use a PLUS D in both 48K and 128K modes. Ed.

Letters may be shortened or edited to fit on these pages.

* * SMALL ADS * *

CITIZEN 124D 24 pin dot matrix printer (parallel). Very good condition. Boxed with manual and fanfold paper. £150. Phone 0428 64388 for details.

SAM Coupé 512K, two drives, Comms interface, MasterDOS & MasterBasic, Lerm Samtape 4 and Toolkit, £150. Spectrum+, PLUS D interface, two DSDD 5¼" drives, VTX5000 modem, Joystick interface, leads and software, £100. Phone 0782 49071.

SERIOUS SPECTRUM SOFTWARE Hisoft Devpac Assembler (PLUS D disc) £7. Spare Devpac manual £2. Hisoft Pascal (Tape) £5. Tasword+2 £6. OCP+80 Assembler £4. Phone Richard on 0742 475035 after 5.30pm.

URGENTLY REQUIRED Sambus with real-time clock to run Amateur Radio software. Will pay full price + postage for good secondhand unit and recorded delivery. Tel: Ron Deeks on Brighton (0273) 746819.

SAM Software and Hardware for sale. All items very good condition. Send SAE to M.Longhorn, 39 Cranbrook Road, Redland, Bristol, BJ6 7BP.

YOUR ADVERT

Selling, Buying, Pen Friends, etc.

Any **PRIVATE** advert, up to 30 words (subject to acceptance), will be printed **FREE** in the next available issue. Any software sold must be original, in working order and with full instructions. The publishers will not be held, in any way, responsible for adverts in this column. Trade advertisers contact the publisher for rates.

PLEASE NOTE:- Due to limited space we can't guarantee your advert will appear in a particular issue. If your advert remains unpublished after two issues please send it in again.

SOFTWARE

SAM Coupé SOFTWARE - On 3½" Disc

DRAGON TILES The thinking man's game. Always different, always taxing, the most addictive game so far written for the SAM Coupé. RRP £8.95
Order Code SCD-01 Price £6.95

SAM DEMO DISC #1 Utilities, demos, screens, a game, and lots more. A real bargain for any SAM owner.
Order Code SCD-02 Price £1.50

DISCIPLE/PLUS D SOFTWARE

Please state 3½" or 5¼" disc

ARTIST 2 The best art package ever written for the Spectrum. 48K and 128K versions on the same disc with page maker and utility software. RRP £19.95
Order Code SPD-01 Price £16.95

* * * NEW - NEW - NEW * * *

UTILITY DISC #1. Six of the best and most useful disc utilities for DISCIPLE or PLUS D. Added mystery bonus program - not to be missed. Requires GDOS 3d or G+DOS 2a
RRP £9.95
Order Code SPD-02 Price £6.95

LATEST DISCIPLE/PLUS D DOS VERSIONS

Supplied on tape for transfer to disc. G+DOS 2a for PLUS D (ROM 1a)
Order Code FST-90 Price £4.50
GDOS 3d for DISCIPLE (ROM 3) Includes new set-up program, far easier to use.
Order Code FST-91 Price £4.50

SAMSPEC SOFTWARE

SAM + Spectrum software on one disc. (3½" or 5¼" - please state on order)

FONT LIBRARY #1. 100 screen fonts plus support software, easy to use on either computer. Special +3 disc available (Spectrum files only)
RRP £8.95
Order Code SSD-01 Price £6.95

MONEY MANAGER Advanced Personal Budgeting System for both machines, Spectrum version needs 128k/+2 (not +3/+2a). RRP £15.95
Order Code SSD-02 Price £12.95

FORMAT

READERS SERVICES

HARDWARE

SPI. - SAM's Parallel Interface A full feature Parallel Printer Interface. Totally compatible with SAM's ROM and DOS printing routines and with utility programs like FLASH and TASWORD 2. The SPI has the added advantage of being BI-DIRECTIONAL so allowing information to be read into your Coupé from almost ANY other computer. Uses standard BBC lead (see below). RRP £21.95
Order Code SPI Price £15.95

PRINTER LEAD Top quality parallel printer lead (BBC Standard). 2 meters long. For use with DISCIPLE, PLUS D or SAM. RRP £9.95
Order Code PPL-01 Price £7.95

FORMAT BACK-ISSUES

Volumes 1, 2 and 3 of FORMAT now available only as complete volumes.
Order Code FBI-V1 (Vol.1) Price £10.00
Order Code FBI-V2 (Vol.2) Price £12.00
Order Code FBI-V3 (Vol.3) Price £12.00
All issues, from Volume 4 N° 1 to the latest issue, are still available separately. To order quote the Volume/Issue N Price £1.50 each, (5 or more £1.25 per copy)

FORMAT BINDERS

Hardcover binders to protect your valuable magazines. Each will hold 12 issues, easy to insert/remove.
Order Code FMB-01 Price £4.50

ORDERING

All prices include UK Postage and Packing. Overseas readers please add 10% to total order for extra postage. Please **WRITE YOUR ORDER ON A PIECE OF PLAIN PAPER**, and mark envelope **ORDER**.

Clearly state Order Code; Title; Quantity required; price & add any postage as above. Remember to quote your membership number or we can't send out your order. Payment in **STERLING** by Cheque (UK bank), P.O. Euro Cheques or Cash. Make cheques payable to **FORMAT**. Payment **MUST** accompany order. Please allow 28 days for dispatch. **FORMAT** Publications will not be held liable for delays or non-delivery due to circumstances beyond its control.